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ANNUAL REPORT

DIVISION OF FORESTS AND PARKS

FISCAL YEAR 1983

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APPROVED BY DANIEL CARTER, STATE PURCHASING AGENT

COMMONWEALTH OF MASSACHUSETTS
DIVISION OF FORESTS AND PARKS
ANNUAL REPORT
FISCAL YEAR 1983
GILBERT A. BLISS, DIRECTOR

This annual report of the Division of Forests and Parks is largely contained in specific Bureau liveports. Certain items, however, are worthy of special comment as follows:

WACHUSETT SKI AREA - PHASE I

This year saw the beginning of construction relative to the long awaited expansion of ski facilities at Wachusett Mountain State Reservation.

Ground breaking occurred on July 15 and the dedication of the base lodge occurred on December 17. Winter weather conditions were far from ideal for skiing and the problems of a compressed construction schedule became apparent in stabilization and run off problems particularly in the base area. A number of turbid water discharges into the City of Fitchburg reservoir resulted in much concern and a lively dialogue which generally occurred at Monitoring Board and Wachusett Advisory Council meetings. Phase I was finally completed satisfactorily by the end of June and with a restructuring of management Wachusett Mountain Associates was authorized to begin Phase II in July.

MANAGEMENT PLANNING

The need to demonstrate in some organized fashion the stewardship of public lands which is a major reason for the Division's existance, has long been a matter of concern and effort.

A high priority has been given to this activity by Commissioner Gutensohn and a plan for steady accomplishment has been established. Muriel Moore, Forest Resources Planner and John Feingold of the Office of Planning are coordinating this effort.

The planning process is designed to identify and dimension the fragile and culturally important sites within the state forest and park system and to place them in a protective management framework, along with renewable natural resources, as an enduring positive contribution to the qualitly of life in Massachusetts.

The initial areas chosen for this planning program are as follows:

Region 1 - Myles Standish State Forest

Region 2 - Harold Parker State Forest

Region 3 - Wachusett Mountain State Reservation

Region 4 - Holyoke Range State Park

Region 5 - Mount Greylock State Reservation

POLICY AND PROCEDURES MANUAL

In the early 1970's manuals were initiated to provide consistency and guidance in field operation of Division facilities. Policy memorandums were added by the Director as need dictated, with the result that eventually the manuals gradually became too bulky redundant and umbersome.

Brockton Rink Supervisor Robert Smith was assigned to a special project during the summer of 1982 to make a start at consolidation and updating. Committees for the subject areas of revenue, expenditures, operations and maintenance were established during the following winter and a final draft was prepared in early 1983.

Chief of Urban Services Robert Freedman is editing a final version which will be completed by the end of calendar 1983.

It is intended that this manual will play an increasingly important role in the delivery of our program services to the public.

BUREAU REPORTS

BUREAU OF RECREATION -

CHARLES H. DANE, CHIEF

BUREAU OF FOREST DEVELOPMENT -

THOMAS F. QUINK, CHIEF FORESTER

BUREAU OF INSECT PEST CONTROL -

CHARLES S. HOOD, CHIEF SUPERINTENDENT

BUREAU OF FIRE CONTROL -

ANTONIO CASTRO, CHIEF FIRE WARDEN

BUREAU OF URBAN SERVICES -

ROBERT FREEDMAN, COORDINATOR

ANNUAL REPORT

FISCAL YEAR 1983

BUREAU OF RECREATION

CHARLES H. DANE, CHIEF

Fiscal year 1983 was one of a marked increase in usage of Division of Forests and Parks facilities. Overall attendance increased over last year by more than 1 million users to 11,462,167. This increase in plus contain fee increases instituted in FY 82 resulted in an income increase of over 1 million dollars to $5,820,894. In the FY 1982 annual report I pointed out that the FY 1983 budget allowed us to retain any income over 5 million dollars from certain sources for use within our facilities to improve the quality of the areas as well as provide better service. Your efforts to improve programs and fee collections have resulted in about $400,000 in addition to our regular budget being made available for these purposes. To all my congratulations on a job well done.

BUDGET CONSOLIDATION

The Bureau has traditionally operated with each specific program having its own operating budget. Over the past few years these budgets, which at one time numbered 7, have been gradually combined until finally this year we have only one budget. While funds are still targeted for specific programs this single budget allows a great deal more flexibility and thus a more effeciently run bureau.

SEASONAL HIRING

Recall

The Bureau of Recreation was again allowed to hire previous employees for certain long term seasonal positions. These experienced people constitute the backbone of our seasonal staff and contribute greatly to the operation of our facilities.

Students

The Bureau of Recreation filled selected positions on a statewide basis with college students majoring in law enforcement, environmental studies and recreation management. Positions were matched with students in an effort to give them the best possible on-the-job training in their chosen field of study. This in turn gives the Bureau the benefit of the students training plus some very interested and enthusiastic employees.

LIFEGUARDS

The Bureaus ability to attract qualified lifeguards was good in certain areas but lacking in others. It is extremely important that all positions be filled but our testing and qualification requirements must be kept at their current high level. A special effort will be made during the off season to provide necessary training in-house at those areas where the private sector is not currently providing this training.

NEW ACQUISITIONS

The Department acquired 60 parcels during FY 1983 totaling 1,604 acres and costing $9,996,955.

These acquisitions were both additions to existing areas and completely new facilities. Examples of these purchases are: portions of the Appalachian Trail in Region 5; additions to the Holyoke Range in Region 4; continued purchase for the new Blackstone Park in Region 3; purchased of properties for Lowell and Lawrence Heritage Parks in Region 2; and the purchase of a warm water ocean frontage at South Cape Beach (432 acres) and Washburn Island (335 acres) in Region 1.

APPALACHIAN TRAIL

Management responsibility for the Appalachian Natural Scenic Trail has changed direction this year from what has previously been expected. The National Park Service has approved the Appalachian Trail Conference to accept primary management responsibility for all National Park Service Appalachian Trail corridor properties from Maine to Georgia. This apparently is acceptable to all the states except Massachusetts. The Appalachian National Scenic Trail Advisory Council approved this concept with the Massachusetts representative abstaining when the vote was taken.

Massachusetts was one of the first states to become actively involved in the Appalachian Trail Protection Program. The Department of Environmental Management will control over fifty (50) Miles of the Appalachian Trail when the acquisition program is completed. The National Park Service had indicated, until this year, that Massachusetts would have major management responsibility for federal lands in the Commonwealth. Negotiations with the National Park Service are continuing with a general feeling that a compromise solution can be worked out that will acknowledge our special situation in Massachusetts.

Upper Goose Pond

The area surrounding Upper Goose Pond in Lee and Tyringham has been acquired by the National Park Service as part of the Appalachian Trail Corridor. It is one of the few remaining undeveloped lakes in Berkshire County and had been a high priority for state acquisition prior to the Appalachian Trial Program. The area is being maintained by paid and non-paid volunteers from the Appalachian Trail community. Many meetings have been held with local authorities and property owners to deal with management planning and problems.

Bascom Lodge

For a number of years, the Department has been seeking alternatives to improve the management of Bascom Lodge on the Summit of Mount Greylock, the states highest peak. During the winter of 1982-83 negotiations with the Appalachian Mountain Club were completed and an agreement signed to have Appalachian Mountain Club manage the lodge. The Appalachian Mountain Club has managed similiar facilities with great success. Under this arrangement Appalachian Mountain Club operates the lodge and provides interpretive and informational services and a trail crew to maintain the Appalachian Trail as well as the significant trail system contained within the state reservation.

RINKS

Energy Conservation

Conservation efforts continued throughout the season through total utilization of the Heat Recovery System. In addition, final preparations are in process to implement a computerized system of electrical usage control. Each rink site has been equipped with computer equipment which provides information to a central terminal in Boston. Information, such as ice temperature, building temperature, atmospheric temperature is given. This data enables the terminal operator to make a determination as to whether systems in operation at a facility are necessary for programming and ice maintenance. The computer has the capability of shedding unnecessary loads, thereby, reducing the demand and kilowatt hours of each site. All matching funds for this project have been received from the Federal Land and Water Fund as of June, 1983, this totaled 250,000 dollars.

Off-Season Programming

In a continuing effort to better utilize rink facilities during off-season periods, some gains have been made. Ice related programming included spring usage at New Bedford by the Rita Blair Figure Skating School. The Newburyport Arena hosted the Port Hockey School and Peabody enjoyed the Cape Ann Hockey School. These arenas were operated by the permittee on a flat fee rental agreement with the Department. The costs of utilities was absorbed by the rentor.

With regard to non-ice related activities, we enjoyed utilization at Fall River, Brockton and Haverhill by the "Royal Lippizan Stallion Show". The Peabody Arena was the site of a successful 1st annual "Peabody Pops Concert". Our facilities continue to be popular locations from Home Shows and Trade Fairs. All Star Wrestling appeared at Gardner along with concerts and the annual Dek-Hockey program. Dek-Hockey was extended to our arena at Marlboro which has enjoyed much success in the formation of a new youth league. All of the above mentioned programs operate under the prescribed fee schedules.

Taped Music

3M taped music has eliminated the necessity costly copyright fees. New updated equipment has been installed at all arenas. This equipment has capabilities to provide the wide ranges of musical entertainment for public skaters. It also provides for a monthly change in programs offered at reasonable cost to this Department. It is anticipated that this improved music programming will result in an increased attendance at public skating sessions.

POOLS

New Programming

Pilot programs in water recreation have been implemented. Water Aerobics, following the Presidential Fitness Program guidelines, has attracted interest at Lowell, Leominster, and South Hadley.

A water basketball league is in progress at Lowell with a large number of participants.

INTERPRETIVE SERVICES

Summer interpretive programs were offered in 18 parks during Fiscal Year 1983. Programs were initiated this year at Salisbury Beach, where weekly evening programs at the beach pavilion were well received.

In-service training for seasonal interpretors was held at Great Brook Farm in Carlisle and at Walden Pond in Concord. A park festival week was held from August 7 through August 14, featuring programs such as children's days, a play on Henry David Thoreau, and fishing derbies.

Interpretors worked year-round at Holyoke Range, Walden Pond, Lowell, Salisbury Beach and Great Brook Farm, where they presented some week-end programming, and completed research and program development projects.

Interpretors were recruited from area colleges, public school facilities, and environmental education centers for summer 1983. The seasonal staff was trained June 5-8 at the Channel 3 Country Camp in Coventry, CT. Training was done in cooperation with the Appalachian Mountain Club, the National Park Service and the State Parks of Connecticut. The Massachusetts Park Supervisors also participated in the training program for two days.

In a lease agreement with the Appalachian Mountain Club for the management of Bascom Lodge, three interpretors were hired for Mt. Greylock State Reservation for the summer 1983. Two are AMC employees, one is DEM, but all three will work to interpret the entire reservation.

A two projector slide-tape program on the Division of Forests and Parks was completed which highlights the Bureaus of Recreation, Fire Control, Urban Services, Insect Pest Control and Forest Development. A copy will be distributed to each Region. A slide show on Wompatuck State Park was also completed by a student at New England School of Photography with a great deal of assistance by staff members at the park.

Region 3 staff completed restoration work on the 19th century school house at Moore State Park in Paxton. A curriculum guide was developed on the schoolhouse, which will be made available to teachers when they plan to visit the park. An eight part curriculum was also developed in Lowell focusing on the water power theme.

Boston office staff and Lowell Heritage Park staff designed and presented a course on park interpretation at Mt. Wachusett Community College. This was a pilot project in a possible interpretor certification program for the Urban Heritage Park System.

An exhibit on the natural history of beavers was completed and is currently on display at the new Holyoke Range Visitor Center. The Civilian Conservation Corps was commemorated at a 50 year anniversary exhibit at the Mt. Greylock Visitor Center. New interpretive brochures were produced for Pittsfield State Forest and Walden Pond.

Interpretive Services personnel with other Bureau employees, designed and staffed an exhibit and booth at the Eastern States Exposition in Springfield and the Camping, Travel, and Trailer Show in Boston.

Volunteers continued to be vital to the success of interpretive programs across the state. The Friends of the Holyoke Range, Friends of Borderland, and Friends of Boston Harbor Islands regularly provided educational and recreational activities and worked in information services. At Walden Pond, volunteers led "Thoreau Rambles" on busy summer week-ends. Also essential to the program has been the growing support among park staff in developing interpretive facilities, materials, and in participating in ongoing programming.

* (See Appendix for Attendance at Formal Interpretive Programs)

LAW ENFORCEMENT

The need for uniformed law enforcement officers at many of our facilities is a necessity to protect the well being of our patrons, our employees, and to maintain order. The Division has continued its policy of supplying trained law enforcement people to those areas that require such attention.

The Division, being conscious of the financial burdens that such a treatment entails, has made every effort to minimize the number of facilities and the number of shifts covered without jeopardizing proper management. This program has served to satisfy many of our visitors by not only affording immediate response to problems, but also "peace of mind" which can only come from visibility of law enforcement personnel.

The sixteen fully trained Forest and Park Police Officers have proven to be a very real asset to the Bureau. Their special police training combined with knowledge from years of work with the public in the recreation field enables these officers to do a very effective job. While they have functioned well on overtime details, it should be noted that this training has proven very benefical during regular work shifts and has served the Bureau many dollars through the efforts of these officers.

Curt Rudge, Forest and Park Police Officer, continued for the second straight summer to provide a mounted patrol at Hopkinton State Park. This area with its large number of day-use visitors has experienced fewer problems since the inception of this highly visible and very effective program. In order to provide this patrol seven days-a-week, the Massachusetts State Police have placed a full time horse and rider at Hopkinton to work, along with Curt. Since this mounted program is working so well the Bureau is planning to expand the number of horses which it owns from one to six animals. These will be assigned only to those officers volunteering for the program.

The State Police have also expanded their mounted patrol to Salisbury Beach State Reservation in addition to Walden Pond where the the mounted unit was first introduced. These mounted patrols have proven to be extremely effective in controlling crowds and reducing problems.

The Department of Law Enforcement has sent many new employees through the State Police Academy and now is at full strength. The intermittent of these officers at our facilities during their normal work days and their employment on necessary overtime shifts is welcomed.

As in the past the Registry of Motor Vehicles has provided officers as needed on overtime shifts and during regular shifts as needed.

The combine efforts of Law Enforcement Officers from these four state agencies plus cooperation from local police departments is very crucial for us to maintain safe and enjoyable programs and facilities for the public.

HOST FAMILY PROGRAM

The Host Family Program continues to provide a valuable service in the nine parks - Scusset Beach State Reservation, Myles Standish State Forest, Nickerson State Park, Shawme-Crowell State Forest, Massasoit State Park, Harold Parker State Forest, Lake Dennison State Park, D.A.R. State Forest, and Tolland State Forest - where the program is employed.

This program, first introduced in 1979, allows a family that is familiar with the park and its surrounding to camp free of charge for two, three, four weeks in exchange for light maintenance duties and dissemination of information to fellow campers. Some of the various participants have been: retired persons, school teachers, and just long time campers. These individuals with their varied backgrounds and experience the overall camping experience.

RULES AND REGULATIONS

The Bureaus annual rules and regulations hearings were held on at 6 locations across the state to insure the opportunity for ample public input. The Bureau requested only minimum changes. This combined with an apparently satisfied public made for very short and uneventful hearings.

FEES

Due to many fee increases in FY 82 no increases were made in FY 83. The next increases of selected fees are anticipated in the autumn of FY 84.

SPECIAL USER PERMITS

These permits are issued to non-profit organizations for free entrance to our day use facilities where charges are normally collected. Most of these permits are good for the year and may be used any weekday. It is required that the Area Supervisor be contacted one week in advance to insure that adequate facilities are available. If certain special events are planned then the permits may be issued for only 1 day. There permits account for more than 150,000 visitors who entered free of charge.

EXPERIMENTAL CROSS COUNTY SKI PROGRAM

In the winter of FY 1982 the Department entered into agreement.

For several years the Department has had discussions regarding cross country skiing facilities. We have issued permits for concessioneers to rent, give lessons, sell equipment, sell food and drink using our buildings and lands.

In FY 1982 we entered in an experimental 3 year contract which allowed all of the above plus authorization for the concessioneer to charge for the use of agreed upon trails which he maintained. These trails were to have man made snow laid in order to greatly extend the period of usuable time. Unfortunately the winter of 1981-1982 was a complete wash out for skiers with warm weather and rain. In the winter of 1982-1983 weather condition were more conducive to this experimental program. A fee of $5.00 per user was charged on weekends and $3.00 on weekdays. Night skiing with lanterns marking the trail was available 3 nights per week. The program ran for 42 days and serviced about 6,000 people.

ANNUAL REPORT

FISCAL YEAR 1983

BUREAU OF FOREST DEVELOPMENT

THOMAS F. QUINK, CHIEF FORESTER

INTRODUCTION

A potpourri of occurrences summed to an interesting, diversified and eventful FY 1983. New positions, new initiatives, a new law, a new State Forestry Committee and new Departmental Administrators, collectively, like rays of sunlight pouring through a sylvan canopy, imparted a rejuvinatory spirit to an old but dedicated Bureau.

BUDGET

The year's state budget consolidated the three forestry bureaus -- Insect Pest Control, Fire Control and Forest Development -- into one account. This financial melding offers more flexibility and inter-bureau cooperation. All three bureau chiefs are pleased with the first year's outcome of this new fiscal ploy.

Forest Development's portion of the budget was ample ($901,048), of which about $220,000 were earmarked for hiring three new forest management teams, each comprised of a forester and assistant. Included were sufficient monies to purchase three 4x4 Chevrolet S-10 Blazers and five Chevrolet S-10 Pick-up trucks, plus specialized forestry equipment to outfit each team.

Negative news on budgets came from the federal government, specifically the State and Private Sector of the U.S. Forest Service. Reimbursements continued to dwindle in federal FY 83 and the FY 84 budget is expected not to include any monies for the Rural Forestry Assistance (service forestry and forest products utilization)

Programs. Though only three positions (the urban forester, forest resources planner, and assistant to the utilization specialist) rely on federal funds, these monies in past years were used to fund, in addition to the three positions, special projects and to reimburse the Commonwealth in part for its' share of the service forestry program. Concerned about diminishing federal funds to states through the U.S.D.A. Forest Service, the National Association of State Foresters (NASF) has organized a task force to determine why that federal agency is not successful in competing for its share of funds, and to explore new sources of federal and private monies. NASF is looking at other federal agencies for future financial support and studying the possibility of dedicated monies for all forestry programs -- management, protection, planning, etc. NASF's 1984 annual meeting in Lexington, Kentucky during early October shall be addressing these matters and should be one of the most important and interesting ones in the past several years.

PERSONNEL

Resignations, retirements and shifts in personnel highlighted the year!

Ted Cady, RC&D Forester for the Berkshire-Pioneer Area, resigned in June 1982 to accept a position with Peck Lumber Company as its Chief Forester. This left a position to be filled in early FY 83.

In latter July, 1983, Stetson Adams, a longtime Department employee and the service forester for the Southern Berkshire District, notified us of his retirement, thereby creating a second vacancy.

The newly funded management teams created three forester positions and three forester-assistant (forest & park supervisor) positions.

As reported last year, the federally funded ACP Fuelwood Project would not be refunded during federal FY 84 which commenced October 1, 1983. These monies funded the five federal-temporary "Fuelwood Forester" positions, which would be phased-out in mid-winter. However, by a quirk of fate, the aforementioned forester positions created by a resignation, a retirement and three newly legislated "02" positions equalled five, the same number of foresters that would be terminated when all ACP Fuelwood monies were expended. Thus, no foresters were laid-off, just reassigned to new positions. Shifting also occurred, since some service foresters requested reassignment to management forester slots. The resulting shifts and assignments follow:

1. Gerry Veale, from Norfolk County Service Forester to RC&D Forester, Berkshire-Pioneer Area.
2. Laura Dooley, from Northeastern Area Fuelwood Forester to Norfolk County Service Forester.
3. Ed Fuller, from Berkshire County Fuelwood Forester to Service Forester, Southern Berkshire District.
4. Austin Mason, Plymouth County Service Forester assigned to work the new Southeastern Management Forestry District.
5. John Clement, from Southeastern Area Fuelwood Forester to work the Southeastern Service Forestry District which includes the counties of Plymouth, Barnstable, Dukes and Nantucket.
6. Michael Fleming, Northern Worcester County Service Forester assigned to work the new Northern Berkshire Management Forestry District.
7. Jane Baldiga, from Worcester County Fuelwood Forester to work the Northern Worcester County Service Forester District.

8. Carmine Angeloni, from Connecticut Valley Fuelwood Forester to the new position of Western Connecticut Valley Management Forester.

Three new management forester assistants were hired from the recently certified Civil Service "Forest & Park Supervisor" list and assigned to the following districts.

- William Cote to the Western Connecticut Valley
- Joseph Rysz to the Northern Berkshire
- Jerry Ross to the Southeastern Area

Also, because of high standing on the Civil Service list, F&P Supervisor, Harry Penniman was granted his request for transfer to the Northeastern Area management forester assistant position, replacing Raymond Foucher.

During the Spring of 1983, Jane Baldiga resigned to move to California. Forester Joseph Smith, on a leave of absence with the Federal Bureau of Indian Affairs, returned to assume the Northern Worcester County Service Forester responsibilities.

Two foresters, through bonds of matrimony, ventured to take on additional responsibilities during FY 83 (and beyond). Joanne Nunes, Hampshire County Service Forester married, on September 11th, Fred Hayward, Berkshire District Supervisor for the Bureau of Insect Pest Control. On November 6th, Austin Mason wedded Julie Guinn, former publicity agent for D.E.M. and now in a similar position with D.E.Q.E. Congratulations and best wishes are extended to both couples!

It's hoped that the forestry personnel situation has stablized for a while. But with an upcoming Civil Service Exam for D.E.M. Foresters scheduled sometime during FY 84, who knows?

LEGISLATION

FOREST CUTTING PRACTICES LAW

The Massachusetts Forest Cutting Practices Law, M.G.L. Ch. 132, sections 40-46, first enacted in 1943, has been amended. The amendments, in the form of Senate Bill number 2035, were filed by Senator Robert Wetmore, D-Barre, and signed into law on December 28, 1982.

The amended law standardizes cutting practices for the entire state on public as well as private lands. This standardization should eliminate adoption of separate logging ordinances by individual municipalities. It places the responsibility of enforcement on the Division of Forest and Park personnel. It will also assist the logging industry in complying with standard cutting practices throughout each of the Commonwealth's 351 municipalities. Unscrupulous harvesting has prompted some towns to enact local logging bylaws. If each of the Commonwealth's municipalities (351 in all) take this course, it would create mayhem among the primary forest products industry, as was experienced by the town-enforced logging ordinances of the state of New York.

The intent of the law is to ensure that the land being harvested will remain in a condition that will not jeapordize the public interest. Public welfare requires the rehabilitation, maintenance, and protection of forest lands for the purpose of conserving water, preventing floods and soil erosion, and improving the conditions for wildlife and recreation. The policy of the Commonwealth is one of cooperation with woodland owners and other agencies interested in forestry practices for the proper and profitable management of all forest lands in the interest of the owner, the public and the users of forest products.

The law directs landowners to notify the Director of the Division of Forests and Parks of their intent to cut forest products, submit a cutting plan for approval by the Director or his agent and in the case of wetlands, to notify the town's Conservation Commission of their intent to harvest. The law also requires the notification of abutting landowners (in the assessor's records) only when the closest cutting edge is within 200 feet of the abutter's property line. In the event that the Director, or his agent, does not act on the notice of intent and issue a work order within 10 days of it's receipt, work may begin, EXCEPT IN WETLAND AREAS, in conformity with the submitted plan, provided the licensed timber harvester has a copy of the submitted plan on the site of the operation whenever work is done.

Failure to give notice and a written plan to the Director or his agent or failure to follow the plan of operations is punishable by a fine of not more than one-hundred ($100) dollars for each acre of land on which cutting occured in violation of, or in the absence of, the plan. The Director or his agent is authorized to issued a stop order to shut down immediately any operation that fails to meet the law or regulations until such deficiency is corrected to the satisfaction of the Director's agent, or if not corrected, until the Director holds a hearing relative to revocation of the logger's license.

The provisions of this law exempt: cutting by an owner or tenant of any forest product for his own non-commerical use; cutting or sale of such products by any owner to an amount not exceeding twenty-five thousand (25,000) board feet or fifty (50) cords on any parcel of land at any one time; cutting for clearance or maintenance on rights-of-way pertaining to public utilities and public highways; clearing land for building or for purposes of cultivation or maintenance cutting in pastures.

Since 1978, the forestry community in Massachusetts has been involved in updating/amending the Forest Cutting Practices Law, which was initially created in response to the forest destruction caused by the hurricane of 1938. Over forty (40) years have elapsed since that time and the conditions of forests and woodland ownership patterns have changed considerably in the Bay State.

STATE COMMITTEES

The new law requires the Governor to appoint an eight-member State Forestry Committee, comprised of various interest groups to prepare minimum cutting practices and guidelines. The following have been appointed by Governor Michael S. Dukakis to represent these interests: Forest Landowner - Mrs. Mary Ellen Lees, Acushnet; Primary Wood-Using Industry - Mr. Hobart B. Esty of Ralph A. Esty and Sons, Groveland; Licensed Timber Harvester - Mr. Fred L. Heyes, Orange; Consulting Forester - Mr. Howard Mason, Russell; Environmental Organization - Dr. Ernest Gould, Jr. of the Harvard Forest, Petersham; Water Supply Agency - Mr. Bruce A. Spencer, M.D.C. Watershed Forester, Quabbin Reservoir; Fisheries and Wildlife - Mr. Winston Saville, Becket; and Public-At-Large - Mr. Linwood Lesure of Ashfield. Mr. Gilbert A. Bliss, Director of the Division of Forests and Parks, is an ex-officio member. Professor Gould was elected Chairman and Bruce Spencer, Vice-Chairman of the State Forestry Committee. Rose DiSabatino, Secretary to the Division's Chief Forester, is Secretary to the Committee.

An advisory committee, headed up by the Division's Chief Forester, Thomas Quink, has been established by the Director. This committee will provide counsel to the Division and to the State Forestry Committee in developing procedures for implementing the law and drafting regulations and guidelines. The committee is comprised of about 15 members whose interests coincide with those specified in the new law and represented on the State Forestry Committee. Organizations and agencies represented include the Massachusetts Wood Producers' Association, Massachusetts Association of Professional Foresters, Massachusetts Land League, Massachusetts Association of Conservation Commissions, and the Massachusetts Division of Fisheries and Wildlife.

Both committees have been working diligently on drafting regulations to meet the tentative target for promulgation in early autumn 1983. Since its first meeting on February 8th, the State Forestry Committee met 7 times to develop and refine draft regulations and forms. Some meetings were held jointly with the Advisory Committee which met six times since January 20th. Also, meetings were held with D.E.Q.E.'s Division of Wetlands to iron out a consensus on harvesting forest products in wetland areas. It is anticipated that cutting practices regulations, when promulgated, will be incorporated into the Wetlands Protection Act Regulations. Also, the Bureau's Service Foresters met to review draft regulations and forms, and submitted a constructive critique to the State Committee. Divisional administrative procedures were developed also, on proposed regulations.

Two informal informational hearings have been planned for the "forestry community" in latter August and the formal public hearings, for early September.

PRIVATE LAND MANAGEMENT

SERVICE FORESTRY

The Bureau of Forest Development employs 13 service foresters who provide marketing and technical assistance to the Commonwealth's private landowners and primary forest industries. In the state of Massachusetts, eighty-seven percent of the commercial forest land is in private ownership. During FY 83, service foresters assisted 3,461 landowners with requests for management and marketing assistance and technical advice. Furthermore, they were directly involved in timber sales which supplied loggers, sawmills, and other primary processors with 32,656 MBF of sawtimber and 49,673 cords of firewood.

FOREST TAX LAW/FARMLAND ASSESSMENT ACT

Bristol County Service Forester, Dan Perrin, is the Chapter 61 Statewide Coordinator. In this capacity, he directly coordinates efforts of regional Chapter 61 Coordinators who in turn work with service foresters through the regional supervisors; acts as a liaison with the Massachusetts Association of Assessing Officers (M.A.A.O.); develops Chapter 61 educational information programs for D.E.M. personnel, consulting foresters and assessors. The regional coordinator is also assigned the task of drafting Chapter 61 Policies and Procedures. All policies and procedural matters are channeled through the Chief Forester to the Director for approval.

During FY 83, educational programs were conducted for assessors and landowners, a special Chapter 61 publication was developed and distributed to assessors and other interested parties, and progress was made towards the completion of a slide and tape presentation with the cooperation of the state's Extension Service. Legal Counsel, Gordon Graham participated in several sessions.

FOREST CUTTING PRACTICES LAW

On the first of January, the Governor signed the Forest Cutting Practices Act into law, necessitating the formation of a State Forestry Committee. In addition, an Advisory Group, consisting of many conservation and forest oriented people, was formed. These two committees have reached a near-final draft of the new Rules and Regulations. Only the forms to be used remain a major issue. Details are discussed elsewhere in this report.

Statewide in Fiscal 1983, there were over 600 Cutting Plans filed for 21,000 plus acres. These plans included over 40,000 MBF and 46,000 cords. In addition, over 500 timber harvesting licenses were issued. These figures indicate that we are getting a better handle on the harvesting situation.

PRIVATE CONSULTING FORESTERS

During FY 83, 1,006 landowner requests were referred to private consulting foresters due to the heavy workload and increased responsibilities of the service foresters. There are approximately 120 private consulting foresters in the Commonwealth (as compared to 75 in FY 82) providing a wide range of forestry services. A list of consulting foresters operating in Massachusetts is maintained by the Bureau and periodically updated.

TREE FARM PROGRAM

Tree Farms are woodlands of ten acres or more, usually privately owned, managed for timber production and protected from insects, disease and fire. There are presently over 950 Tree Farms comprising more than 195,000 acres in the state of Massachusetts alone. During FY 83, foresters inspected 199 Tree Farms, surpassing the state goal which was established by the American Forest Institute (A.F.I.) A majority of the Tree Farm inspections were accomplished by D.E.M. service foresters. Reaching the 100% reinspection goal will result in a $1,570 grant for FY 83 Tree Farm Committee for programs. In addition, Massachusetts will receive a $500 grant for such projects as the Eastern States Exposition Tree Farm Booth.

At the March A.F.I. Workshop, Massachusetts was recognized as having the best Tree Farm program in New England. This is the second year the Commonwealth has received this honor. Earlier in the year, Richard Kulis, Western Franklin County Service Forester, was given the Tree Farm Forester of the Year award at Sturbridge, Mass. He was given this award for his outstanding service and dedication to the Tree Farm Program.

Frank and Eleanor Patterson, owners of Tree Farm # 187 in Hancock, Massachusetts, have been named as the state's Outstanding Tree Farmers of 1983. They have 438 acres of woodland in forest management, and will receive their award at the 1983 Eastern States Exposition in September.

LANDOWNER ASSOCIATION

The Massachusetts Land League, a promoter of positive land use throughout the state, continued its slow but steady advance during FY 83. On March 24th, the organization was granted Tax Exempt Status by the Internal Revenue Service. Furthermore, the League began a drive to gain additional membership. The effort was a positive one.

A lack of monies to fund a full-time executive director still plagues the League and prevents it from operating at full capacity. Monies from private foundations are being sought for this purpose. It is anticipated that FY 84 will yield necessary funding.

In the meantime, the League's membership is to tell the public, "Look, our open lands are precious. They must be used wisely or we're in big trouble!" To help promote this concept the Land League offers the following services: a newsletter; meetings, seminars, and field trips; data on recent and pending legislation; sources of technical assistance; distribution of related publications.

CHRISTMAS TREES

Christmas Tree growers are an important sector of the Commonwealth's forest landowners. The Christmas Tree growing industry is assisted by the Bureau of Forest Development through marketing publicity, technical information and advice.

Every year, a Christmas Tree Seller's List is compiled by the Department and available to the public. The list includes the names and addresses of all the Christmas Tree merchants in the Commonwealth by county region. Some Christmas Tree growers/sellers allow the public to choose their Christmas Tree on the stump in early winter, then cut it down on a designated day prior to Christmas. This method, known as "choose and cut", continues to gain popularity as a traditional recreational activity for it's participants.

Once again, Christmas Trees were provided to the constitutional offices of the State House. The 30-foot Colorado Blue Spruce planted on the State House lawn last summer was decorated as the State's Christmas Tree.

This past spring, approximately 600 and 1,500 transplants were established at the Wachusett Mountain State Reservation in Princeton and Hampton Ponds State Park, Westfield, respectively. These trees will be used for demonstration purposes.

MAPLE PRODUCTS

Massachusetts produced 24,000 gallons of maple syrup during the spring of 1983. Lower production was primarily due to low sweetness of the sap and late starting of the sap run in some areas. Syrup production and related maple products such as maple sugar candy and maple butter contributes to a one million dollar industry.

INFORMATIONAL PROGRAMS

During FY 83, service foresters were involved in many activities beyond their normal responsibilities, including working with municipalities in developing watershed plans incorporating sound forest management; working with the Department of Environmental Quality Engineering (D.E.Q.E.) on educating the public on wetlands; assisting in wildlife training seminars for federal, state and private foresters; participating in Society of American Foresters training workshops; and working with local garden clubs, scout groups and public schools promoting forestry.

D.E.M. STATE LANDS MANAGEMENT

PROGRAM EXPANSION

The Bureau's management teams are responsible for the planning, execution, and supervision of forest management on the 265,000 acres of forests, parks and reservations which make up the Division of Forests and Parks. During FY 83, the budget allowed for three management teams in addition to the five already in service. Management district boundaries were revised in order to redistribute acreage among the eight management teams. The new teams will help ensure that the Commonwealth's forest land is being ecologically and economically managed. The Division supports a "multiple-use" management concept which integrates five entities - timber, wildlife, watershed, forage and recreation.

TIMBER STAND IMPROVEMENT

Timber Stand Improvement work in FY 83 was achieved through the Division's three cordwood programs: Cut-A-Cord, the Home Fuelwood Program, and the Commercial Fuelwood Program. Timber stand improvement involves intermediate cutting operations designed to improve the quality and the growth rate of selected crop trees. Approximately 900 acres of state forest land were improved by this method, through the removal of 5,578 cords equal to 836,700 gallons fuel oil.

HARVESTING

During FY 83, the Bureau's management foresters marked and sold 6,463,228 board feet of hardwood and softwood stumpage, generating $588,491.23 in revenue for the state's treasury. Depressed timber markets once again resulted in many marked stands of timber and cordwood to remain unsold, and very low bids being offered in commercial timber sales.

WOOD ENERGY PROGRAMS

The Cut-A-Cord Program, which was initiated in response to the oil embargo of 1973, was only conducted at the Myles Standish State Forest and Martha's Vineyard State Forest. During FY 83, $456 were generated through the sale of 114 cords in the Cut-A-Cord Program.

The Home Fuelwood Program was developed by the Division to assist homeowners who are seriously committed to using wood as their primary source of fuel. In this program, lots ranging from 6 to 15 cords in size are sold on a competitive bid basis. Minimum acceptable bid is $10.00 per cord. During FY 83, 1,568 cords were harvested from approximately 261 acres. These sales generated $29,784.21 in income.

In more remote areas within the Division of Forests and Parks, timber stand improvement work was carried out through the administration of the Commercial Fuelwood Program. This fiscal year, 3,896 cords were sold from 596 acres generating $55,950.97 in revenue.

BOUNDARY MAINTENANCE

Within the State's Forests and Parks system, there are over 1,500 miles of boundaries, which should be inspected and remarked at least every ten years. This year, only 30 miles of boundaries were re-established, due to management foresters spending considerable time and effort on income generating timber and fuelwood sales, and enforcing the forestry laws. New boundary markers were procurred from Massachusetts Correctional Industries.

ENVIRONMENTAL IMPACT REPORT

The Environmental Impact Report was reviewed by professional foresters during FY 83 and we are now in the process of putting the information on a word processor. From all indications, it will be sent out to review during the Autumn of 1983. This is an important document since the forestry portion of the G.O.A.L.S. Program will be relying on this policy document for management of D.E.M. Lands.

STATE LAND MANAGEMENT PLANNING

The Department of Environmental Management is responsible for ensuring that the Commonwealth's forests provide social, economical and environmental benefits to it's citizens. The development of plans integrating these uses at state and sublevels is necessary to achieve these mandates. The goal of the Forest Resource Planning Program is to prepare and implement a comprehensive Forest Resources Plan for the Commonwealth. When completed in 1983, the State Forest Resources Plan will provide policy and program direction for the Division of Forests and Parks, as well as provide the Commonwealth's portion of the 1985 Federal RPA effort.

SPECIAL PROJECTS

In the southeastern management district, 15,000 trees (both Norway spruce and white pine) were planted on the Martha's Vineyard State Forest. Also, 400 containerized white pine seedlings were planted. In an experimental planting, 300 hardwood seedlings were established in Nantucket State Forest. Most of this work was conducted by "03" consultants.

Ten acres of land clearing for the ski lift expansion at Wachusett Mountain State Reservation was completed by Curtis Lumber Company of Hubbardston. The mid-state management team attended ground-breaking ceremonies for construction of the new facilities and received a tour of the new ski lodge.

With the assistance of the Middlesex County Service Forester and the Soil Conservation Service, a geo-textile mat, covered with a layer of gravel, was placed over a 200-foot section of a red maple swamp to make a woods road. When completed, this road will lead to a previously inaccessible area of the Great Brook Farm State Park. The road is presently being used as a demonstration area by conservation commissions and other interested parties, for viewing the material usage.

The Connecticut Valley Management District gained 3 3/4 miles of permanent, multiple-use roads which include 4 gates, 2 bridges, 8 culverts and 8 permanent wildlife openings. The Eastern Connecticut Valley Management District crew provided technical assistance to the Bureau of Fire Control in developing a fire damage appraisal system and developing "seen area" maps to be used for tower siting.

The Berkshire Management District foresters were involved in several meetings and field visits concerning the existance of possible "old-growth timber" stands in Savoy State Forest.

The Central Berkshire Management crew marked and sold 223,500 board feet of timber on 35 acres of the Division of Fisheries and Wildlife lands.

Several of the management foresters manned the Tree Farm booths at the Eastern States Exposition and the Topsfield Fair, answering forestry-related questions from the public.

FOREST PRODUCTS MARKETING AND UTILIZATION

The entire Commonwealth - through increased business, higher employment, a more stable tax base and a more sound environment - shares in the benefits that the FPM&U Program has to offer. The Massachusetts FPM&U Program plays an integral role in the development of industry within the Commonwealth due to it's involvement in the various stages of wood processing from the stump to the finished product. Direct beneficiaries of this program are woodland owners, loggers, wood processors, and their employees. All persons who supplement their energy needs with cordwood, wood chips, or pellets and alternative fuel industries also benefit.

The Massachusetts Forest Products Marketing and Utilization (FPM&U) Program assists the forest landowners and wood processors through technical services and advice on all phases of the harvesting, processing and marketing of forest products. Increased utilization and maximized efficiency are two key objectives of the program.

D.E.M. LANDS

The administration of forest products sales from D.E.M. Lands is one of the responsibilities of the FPM&U Specialist. This includes handling all notifications of intent to cut, contracts and harvesting licenses. Timber sales during FY 83 totalled 6,463,228 board feet of sawtimber and 5,578 cords of fuelwood. Refer to "Income" section for details on related revenues.

PRIVATE WOODLANDS

The Forest Products Marketing and Utilization Program provides marketing information to private woodland owners, as well as the wood products industry. During FY 83, woodland owners were directly assisted through the FPM&U Program in marketing approximately 210 MBF of timber and 19 mcf of fuelwood.

The FPM&U Specialist provides stumpage price information to mills, loggers, and woodland owners through the quarterly "Massachusetts Roundwood Stumpage Price List". Price ranges are determined for county groups, and are based on demand, market availability, timber quality, and stand accessibility which cause them to vary within the same area.

The Chapter 61 Law contains a clause which requires new Chapter 61 landowners to report stumpage value for any wood products removed from their property for a period of two years prior to entering said property under the law. In order to assist these landowners as well as town assessors, in determining this value, a continuous compilation of quarterly stumpage price reports has been developed encompassing all reports compiled since May of 1978 to present.

INDUSTRY ASSISTANCE

Assistance was given to several private industries and quasi-public organizations in locating new and potential markets for their wood products. During FY 83, 20 primary wood industries and 14 secondary wood industries received such assistance. These efforts resulted in the marketing of nearly 5 million board feet of native lumber. As a result, 32 million cubic feet of wood were saved, allowing the Bureau to surpass the target of 780 thousand cubic feet negotiated with the U.S.D.A. Forest Service's R.F.A. - Resource Utilization Program.

The FPM&U Specialist administers the Improved Wood Utilization Program. During FY 83, this program assisted 4 secondary industries and 1 primary industry, through the use of private wood industry consultants. Consequently, 2.3 million cubic feet of wood per year are recovered, and manufacturing problems within these industries have been corrected.

EXPORT STUDY

In an effort to assist the furniture and related-products industry of Massachusetts to expand its potential for increased sales, the Massachusetts Division of Forests and Parks, Bureau of Forest Development, funded the development of an International Marketing Program for Massachusetts producers of furniture and related secondary wood products. The objective of the program was to bring together

Massachusetts producers with reputable foreign buyers and provide the mechanism which would facilitate the export procedure to areas of prime potential. The project included: (1) making the best use of a $100,000 study on furniture exporting completed by the U.S. Department of Commerce; (2) pulling together the resources of the U.S. Department of Commerce, Port Authorities, Massachusetts Department of Commerce, Foreign Agriculture Service Embassy, and others in an effort to promote the products of cooperating Massachusetts companies; (3) identifying and visiting with prospective reputable overseas buyers; (4) promoting coordinator's products, and providing the introduction between prospective buyers and Massachusetts sellers. This was accomplished through the use of catalogues and the knowledge of the capabilities of Massachusetts manufacturers.

The program was completed in June 1983 and the consultant has produced some interesting results which are as follows:

1. Saudi Arabia has shown high levels of interest in Massachusetts' manufactured furniture.
2. England, Belgium, Netherlands and Germany are showing moderate levels of interest but due to the high exchange rate, they are unable to import high quality Massachusetts' manufactured furniture at this time.
3. The consultant has indicated that he has potentially generated approximately 2 million dollars in export sales for Massachusetts' furniture manufacturers.

In the Fall of 1983, the consultants, in cooperation with the FPM&U Specialist and the Massachusetts Department of Commerce, will conduct a workshop on the abc's of exporting. At this meeting the final report of the study will be made available to the participants of the workshop.

TECHNOLOGY TRANSFER

Technology transfer workshops were attended by the Forest Products Marketing and Utilization Specialist and/or his staff during FY 83, in order to better aid industries in improving their operating efficiency and profitability. Workshops included: attendance at three "Export Market Development" seminars; a five-day program on "Wood Energy and It's Applicability"; a two-day session on "Cable Logging" and a one-day laminated wood products workshop. The FPM&U Specialist had a presentation at a Technical Forum on the Massachusetts Improved Wood Utilization Program, at the Forest Products Research Society's annual meeting. The FPM&U staff, in cooperation with the U.S. Forest Service, manned a booth promoting truss-framed building construction at the Northeastern Retail Manufacturers annual convention at the Hynes Auditorium in Boston. The Chief Forester and the FPM&U Specialist also attended/participated in the annual meeting of the Northeastern Lumber Manufacturers Association held in Boston.

Workshops are currently being planned and developed for FY 84. These are aimed at educating people in the forest products industry in Massachusetts and will address such topics as: small business management, basic accounting, and sawmill maintenance.

R.P.A. INPUTS

During FY 83, the Forest Products Marketing and Utilization Specialist participated in the development of the Forest Resource Policy Industrial Sub-Committee Report. He attended several meetings and provided input as to how the Commonwealth could better assist the forest products industries through education and technology transfer.

FOREST PRODUCTS WEEK

The FPM&U staff on September 10, 1982 had the Governor proclaim the week of October 18-22, 1982 as "Massachusetts Forest Products Week" in conjunction with National Forest Products Week. The aforementioned staff, in cooperation with the American Forest Institute, conducted a press tour encompassing all aspects of the forest industries from Tree Farming to finished wood products.

This staff plans for expanded state-wide press coverage during Forest Products Week in FY 1984.

CUTTING PRACTICES

The FPM&U Specialist administers the Massachusetts Forest Cutting Practices Law (M.G.L. Chapter 132, Sections 40-46). A summary of cutting practices operations during FY 83 follows:

Notices of Intent (#)	426
Cutting Plans (#)	601
Final Reports (#)	4
Acreage (acres)	21,000+
Stumpage (MBF)	40,000+
Stumpage (Cords)	46,000+
Harvesting Licenses (#)	515
In-State	460
Out-of-State	55

RESOURCE CONSERVATION AND DEVELOPMENT (RC&D)

AREA EXPANSION

On July 1, 1983 the Berkshire-Franklin Resource Conservation and Development area is to be expanded to include the three counties of the Pioneer Valley (Hampshire, Hampden and Franklin) and will be renamed the "Berkshire-Pioneer Resource Conservation and Development Area". The formal dedication will take place at the RC&D Headquarters on Whalley Street in Hadley, Massachusetts. Congressman Silvio Conte, longtime supporter of RC&D, is scheduled to be the keynote speaker.

ACCOMPLISHMENTS

The Berkshire-Pioneer Resource Conservation and Development component of the Bureau continues to be actively involved with the forestry issues and goals of Western Massachusetts. The RC&D Forester participated in organizing the Western Massachusetts Wood Forum, which was intended to offer an overview and assessment of the issues involved in biomass harvesting to help landowners, policy makers, foresters, industry, and loggers form an educated view of what is needed, possible, and economically and ecologically feasible. The forester: helped promote wood energy to the general public through a radio interview with WRSI in Greenfield, MA.; attended a Fuelwood Management and Utilization Seminar held in East Lansing, Michigan (The objective of this seminar was to address the productivity of forest stands and increase the utilization of wood fibers for energy, to apply appropriate management practices, and to capitalize on emerging markets by forest landowners); acted as Region V Coordinator for Chapter 61, participated in a training workshop for consulting foresters in the four county area and a training workshop for Assessors in Berkshire County; published a "Highlights of Chapter 61" fact sheet; represented the Bureau at a "Speaking of Forestry" conference held in New Rochelle, New York, a workshop for woodland owners; worked cooperatively with Conservation Commissions, the Tree Farm Program (A.F.I.) and the Forest Service to promote forestry.

HOME FUELWOOD SURVEY

During FY 82, the U.S. Forest Service published a document entitled "Wood Energy in Massachusetts", a survey of wood-burning habits of the state's residents. The publication is based on 1979 data. A similar publication, funded by the Berkshire-Pioneer RC&D project, entitled "Wood Burning Among Massachusetts Residents" (1981-1982 Data) is not as lengthy as the aforementioned publication and is, in many respects easier to read. It is the more used publication in the Division of the two.

FOREST RESOURCE PLANNING

The primary goal of the program is to prepare and implement a comprehensive Forest Resources Plan for the Commonwealth. When completed in 1983, the State Forest Resources Plan will provide policy and program direction for the Division of Forests and Parks, as well as provide the Commonwealth's portion of the 1985 Federal RPA effort. This program is directed by Dr. Muriel E. More assisted by Joseph Ochab, Assistant Planner. Mr. Ochab replaced Mary Anne Naples who resigned in March, 1983.

ADVISORY COMMITTEE

Again this year, the Massachusetts Forest Resources Advisory Committee provided valuable assistance to the project. To facilitate production of the plan, they completed the working group reports not finished by the end of FY 82 early in 1983. In addition they continued to review and comment on the technical resource assessments and the Committee will be instrumental in reviewing and revising the draft plan this fall.

STATE FORESTRY PLAN

During FY 83 considerable progress was made in the Forest Planning Program. The major emphasis was on preparing the discussion draft of the State Forest Resources Plan which will be available for agency and public review in the fall of 1983. The Plan will make forest resource policy and program recommendations for the next 5 years based on an analysis of state forestry programs, current forestry legislation, six technical working group reports (covering issues and proposed solutions for the planning and management of state, municipal and privately owned forest land, forest industries, wood energy and forest protection) produced by the Massachusetts Forest Resources Advisory Committee and technical supply/demand assessments of the Commonwealth's major forest resources (timber, recreation, wildlife and water). Initially, the draft plan will be reviewed by the Advisory Committee and Department of Environmental Management agency personnel. Following this the plan will be disseminated for broad public review before final revisions are made.

STATE LAND MANAGEMENT PLANNING

The G.O.A.L.S. (Guidelines for Operation and Land Stewardship) program was another major planning effort launched this year. This program is directed to accelerating the production of multi-resource management plans on units in the state forest and park system. The program is being conducted through a joint effort of the Division of Forests and Parks and the Office of Planning and Development, enabling us to draw on specialized planning and resource management skills throughout the Department. Dr. More was named the program coordinator for the Division of Forests and Parks; John Feingold for the Office of Planning and Development. Developing these plans was identified as a critical need in the forest planning process and should augment future statewide planning by enhancing our ability to specify resource output on state lands.

In other forest planning activities, Dr. More has continued to serve as the Division Coordinator for the Massachusetts Prime Timberlands Mapping Project. The Department of Forestry and Wildlife Management at the University of Massachusetts has been under contract to inventory and map seven counties covering 1,790,500 acres of commercial forest land. To date, approximately 1,000,000 acres have been mapped utilizing a site classification system that estimates both hardwood and softwood potential productivity. Current plans call for the seven counties to be completed early in 1984.

Finally, Dr. More attended the twenty state Northeastern Area State Forest Resource Planners Conference held in May in St. Louis, Missouri. At the meeting, Massachusetts was selected as the host state for the Conference in 1984.

URBAN AND COMMUNITY FORESTRY

The Massachusetts Urban and Community Forestry program hosted this year's New England-New York Urban and Community Forestry conference. Presentations from individual states followed opening remarks by Dr. Malcolm MacKenzie. The final day consisted of a guided tour of the Arnold Arboretum. The conference was well attended. The Urban and Community Forester also attended the second National Urban Forestry Conference which was held in Cincinnatti, Ohio.

The office rendered various forms of assistance to a demonstration project conducted at Great Brook Farm State Park. This project was intended to educate conservation commission members, loggers and developers on the benefits of non-woven fabric as a base for woods roads through wetlands. Several groups and many individuals have toured the erosion control project.

Assistance was rendered to a civic group in the Town of Agawam. A small shopping center in a residential section posed the usual urban forestry problems. Narrow planting strips, sight lines for motor vehicle operators, underground utilities, etc. were all discussed and options listed. Several suggestions were used in the project.

Digital Corporation requested assistance from the Urban Forester. A plot of land on which they wish to site a company building, will have enough undeveloped area that it may qualify for Chapter 61 classification. This may be the first time in Massachusetts where Chapter 61 can be used to influence industrial development.

Working with a member of the Department's planning staff, the Urban and Community Forester became involved in a unique project in Boston's Roxbury Section. The Roxbury Community School has been chosen as a site to establish experimental plantings for soil improvement, food production and aesthetics. The plantings will help determine the species that are most adaptable to an urban environment.

ARBOR DAY PROGRAMS

Arbor Week was held in Massachusetts during the week of April 27th to May 4th with many celebrations taking place across the Commonwealth. The annual proclamation was signed by Governor Michael Dukakis, with many dignitaries representing a variety of groups in attendance.

The Division's efforts in Boston were directed at the Roxbury Community School. A purple leaf plum was planted in honor of the school's founder. Secretary Hoyte was in attendance and addressed the group.

An Arbor Day Celebration involving the dedication of a "Champion" White Oak was held in New Braintree, Massachusetts. The dedication featured various speakers including State Representative Robert Wetmore (D-Barre) and Chief Forester Quink. New Braintree grade school students participated in the ceremony with poems and songs.

FORESTRY/ENVIRONMENTAL EDUCATION

The groundwork for an environmental educational contract with the Massachusetts Aubudon Society was initiated by this office. The rapid turnover in members of local conservation commissions causes problems when the commissions are asked to rule upon such matters as wetland violations. The Massachusetta Aubudon Society, through their sanctuary, have expressed a willingness to run a series of educational courses, at times compatable to a working person's schedule, which would help bring the new conservation commission member up to date on wetlands, forestry, wildlife, etc. We hope to start this program in FY 84.

LIBERTY TREE CORPS

Fiscal Year 1983 saw the initiation of the Liberty Tree Corps. A small portion of funds from the "Jobs Bill" was given to the U.S. Small Business Administration. These federal funds were proportioned according to the unemployment situation in each of the states. The D.E.M. was designated the Commonwealth's cognizant agency and the Urban and Community Forestry Program was assigned to administer the project. A grant application was written and approved, and Massachusetts received $908,600.

Of this amount, half went to state agencies, including the Department of Environmental Management, Department of Fisheries and Wildlife, Metropolitan District Commission, and the Department of Public Works. The other half was offered to cities, towns and non-profit organizations on a "request for proposal" basis. Ninety-three applications were received, and fifteen were selected. The process of getting them under contract was started by the end fo the fiscal year. The selected projects and the amount allocated are as follows.

MUNICIPAL PROJECTS

Belchertown	$ 12,083
Blackstone River Watershed Association	31,597
Boston Urban Gardners	35,150
Dorchester Gardenlands Preserve	52,896
Fall River	47,137
Florida	15,478
Haverhill	50,000
Holyoke	25,000
Lawrence	56,172
Leominster	39,037
Step Up With Lynn	16,500
Orange	30,444
Pittsfield	46,990
Raynham	31,012
Worcester	47,470
	$ 537,506

STATE PROJECTS

Department of Public Works	$ 107,014
Department of Environmental Management	106,878
Metropolitan District Commission	99,262
Department of Fisheries and Wildlife	88,330
	$ 401,454
TOTAL	$ 938,960

INCOME

The forestry account derived income from several sources - namely grants, timber and fuelwood sales, the sale of harvesting licenses and leases/permits. This monies totalled $850,154 for FY 83 as compared to $605,281 in FY 82. The following is an analysis of the Bureau's receipts.

Program

State Land & Tax Law Income		Amount
Harvesting Licenses		$ 4,670
Rents/Leases		9,202
Forest Products		674,682
Chapter 61 Filing Fees		40,600
	Sub-Total	$ 729,154
Federal Income		
RFA - Marketing and Utilization		$ 24,000
RFA - Service Forestry		27,000
ACP - Fuelwood		5,000
ACP - Technical Assistance		7,700
FIP (Forestry Incentives Program)		3,300
FRP (Forest Resources Planning)		32,000
U&CF (Urban and Community Forestry)		22,000
	Sub-Total	$ 121,000
	TOTAL	$ 850,154

ANNUAL REPORT

FISCAL YEAR 1983

BUREAU OF INSECT PEST CONTROL

CHARLES S. HOOD, CHIEF

SUMMARY OF CONDITIONS

In early July the annual gypsy moth defoliation survey was conducted and when completed, the results indicated a fifty percent drop in overall acres of defoliation over the previous year. The anticipated population collapse was beginning. Evidence of disease and starvation was noted in many areas of the State.

Also noted in many areas of the State are dead and dying trees directly attributable to the current gypsy moth outbreak. In an attempt to arrive at an estimated loss figure a series of plots were established across the State. These were examined and data recorded which will be taken up later in this report. It should also be noted that communities are reporting the loss of many oak shade trees due to the severe defoliation experienced during the past few years. Many hemlocks, pines and spruce have also succumbed.

Other forest insects occasionally cause serious mortality of forest trees. One of these which has been included in the Annual Report for the past few years is the oak leaf tier. Severe damage is clearly visible in the Wendell, Erving and Warwick State Forests.

Inasmuch as it is felt that mortality will continue to appear as a result of the oak leaf tier outbreak, the CFI plots within the outbreak area will continue to be examined. The data obtained will be programmed for entry into a computer.

In Plymouth and Barnstable Counties the most severely attacked tree is the pitch pine. Three major insects, either together or separately, are causing the loss of many trees through actual death or disfigurement. These pests are the pine needleminer, the Nantucket pine shoot moth and the pine looper.

Dutch elm disease still takes its toll annually but the statewide total is much less than in the past for the simple reason that we have less elms.

The saddled prominent which had been a problem in the northern hardwood stands on the eastern slopes of the Berkshires subsided and did not present a problem this past year.

Anthracnose, a fungus disease which attacks the leaves and twigs of many decidnous trees, was reported heavy throughout Worcester County and the Connecticut Valley. Oaks, ash, maples and sycamore seemed to suffer the most.

Locust leaf miner, an insect which attacks the leaves of black locust, severely defoliated trees throughout the State where this species of tree is common. Little permanent damage is expected.

RULES AND REGULATIONS

Following the 1982 gypsy moth spray season it became evident that tighter control over local tree spraying programs was needed. The decision was made to formulate rules and regulations under the statutory authority MG. C132, S11.

In October of 1982 a letter was sent to certain individuals currently involved with insect pest control problems to solicit their assistance as participants on a task force numbering 18 individuals including Departmental personnel, town tree officials, beekeepers and interested citizens.

Following a series of meetings and draft changes it was felt that the time had arrived to go to Public Hearing with the proposed rules and regulations. The decision was made to hold joint hearings with Mass. Department of Food and Agriculture, also considering proposed rule and regulation changes pertaining to their involvement with ground and aerial spraying.

The hearing dates and places were duly advertised and held at the Suburban Experiment Station on the evening of March 10, 1983 and at Holyoke Community College on the evening of March 14, 1983. Following review of the oral and written testimony the final version of the rules and regulations was filed with the Office of the Secretary of State. The regulations are now legal (See Appendix).

One vexing problem remained - how to determine "wide area control" as used in the regulations. The services of a consultant, Joan Harrison, were retained in an attempt to resolve the problem. It was felt that interviews involving local superintendents would give the clearest picture of the overall problem. In the company of Bureau personnel the consultant visited with and observed the operations of certain "locals".

Although as yet tried on a practical basis, the following Figure and Table are the result of her work and should provide a mechanism for the district superintendents and the local superintendents to make decisions.

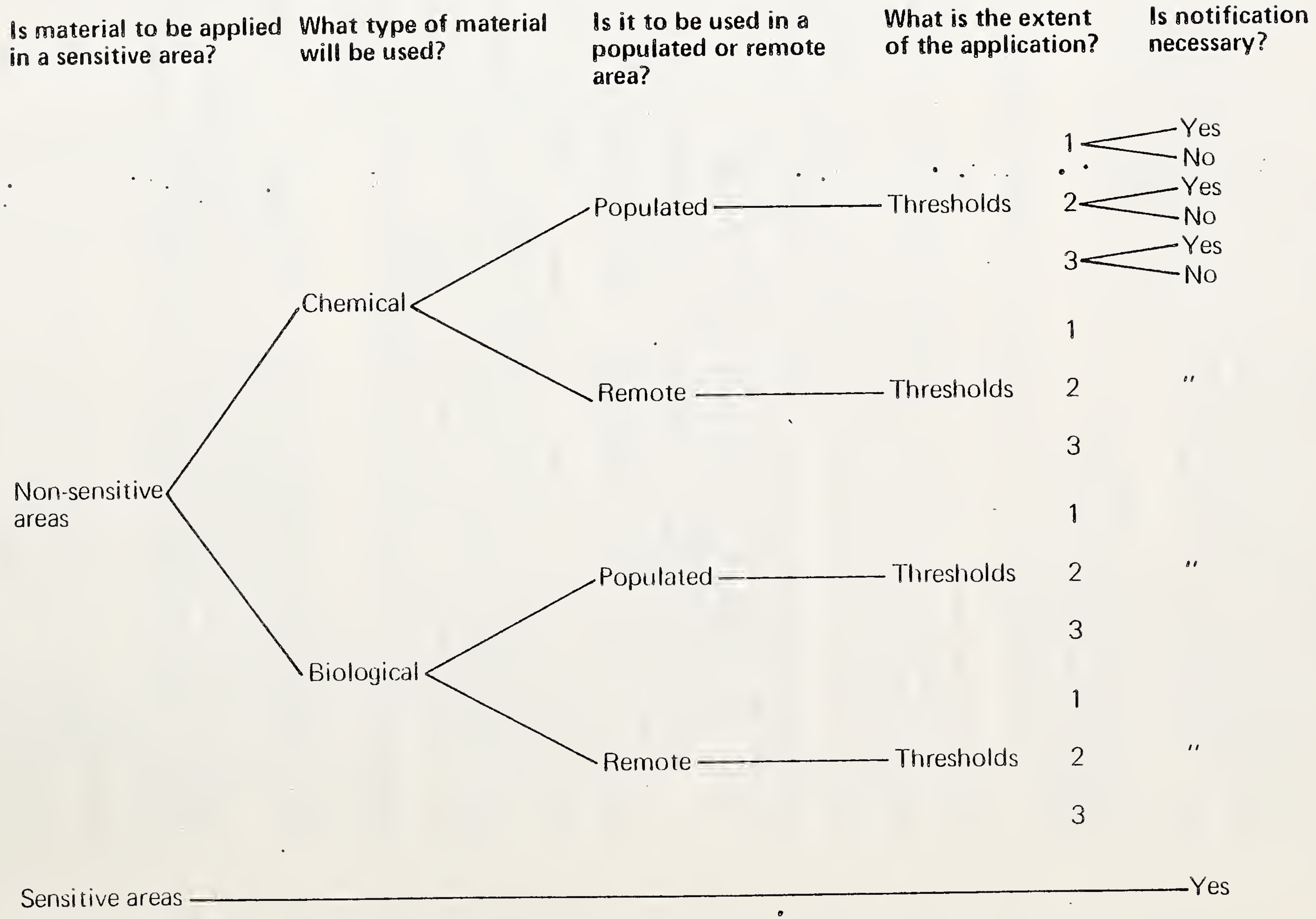


Figure 1

Overall Structure of Proposed Mechanism to Define Wide Area

Is material to be applied in a sensitive area?
What type of material will be used?
Is it to be used in a populated or remote area?
What is the extent of the application?
Is notification necessary?
Non-sensitive areas
Chemical
Biological
Populated
Remote
Populated
Remote
Thresholds
Thresholds
Thresholds
Thresholds
1
2
3
Yes
No
Yes
No
Yes
No
1
2
3
"
1
2
3
"
1
2
3
"
Sensitive areas
Yes

Table 2

THRESHOLD VALUES

	Chemical Control	Biological Control
Populated Area	200 gallons in any one acre or mile	600 gallons
	5 locations	15 locations
	10 acres or 10 miles in any one location	30 acres or 30 miles
Remote Area	400 gallons	1200 gallons
	10 locations	30 locations
	20 acres or 20 miles	60 acres or 60 miles

GYPSY MOTH

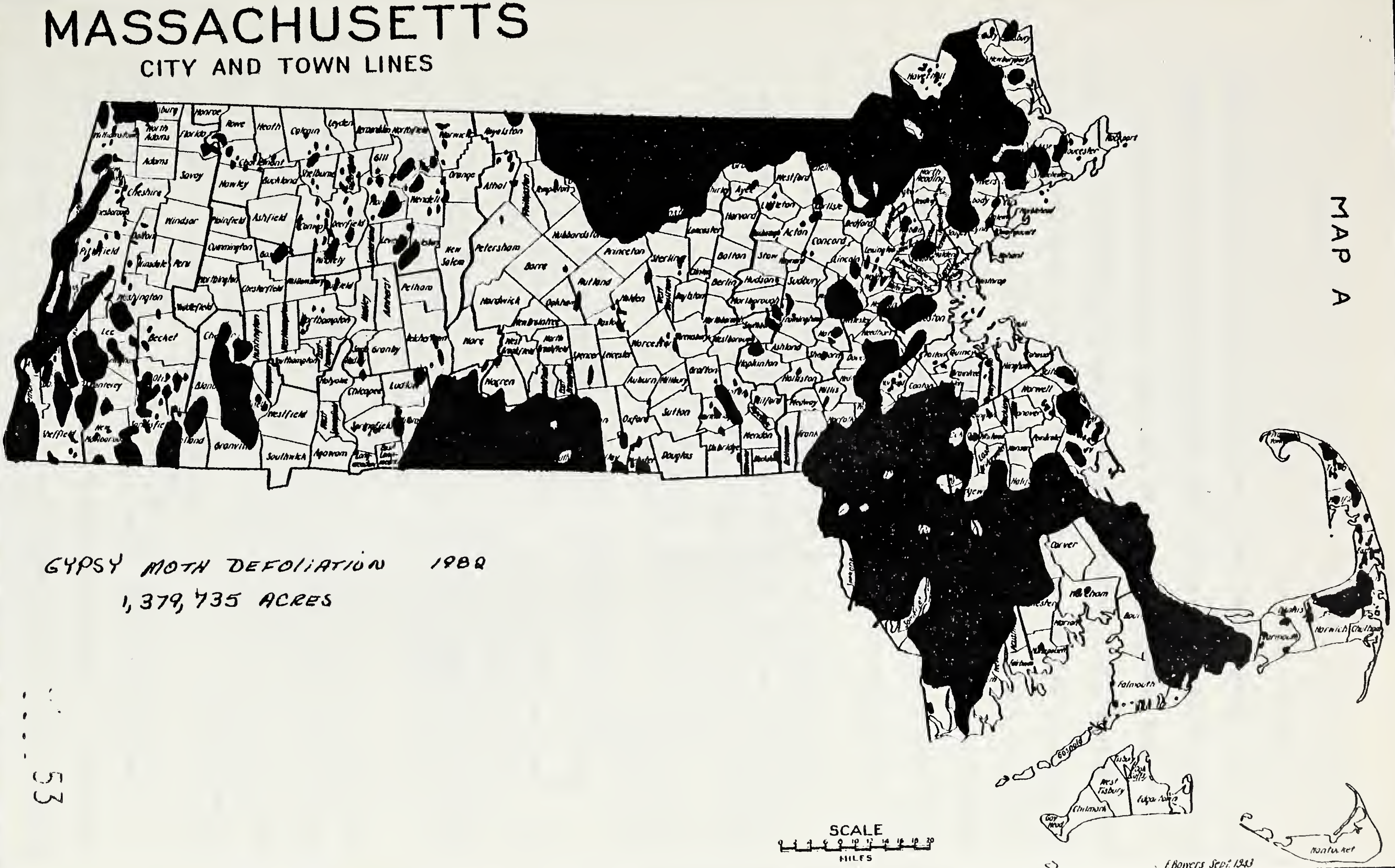
Early in July of 1982 the annual aerial survey to determine the number of acres defoliated by the gypsy moth was conducted by Bureau personnel. Although visible defoliation was extensive, when considered statewide, and although it was the second most extensive year on record, only one half the total acreage recorded in 1981 was noted in 1982. (Map A). The total area recorded as visible defoliation on Geological Survey Maps was 1,379,755 acres. Of this total 403,680 acres were in the 0-30% or light classification, 721,185 acres were 31-60% or medium classification and 263,910 acres were 61-100% or heavy classification.

Duplicate maps were made and given to each District Supervisor. These maps then formed the basis for the egg mass survey. Each community showing defoliation was then contacted by Bureau personnel and the offer made to conduct an egg mass survey. The sole purpose of the survey was to supply the communities with information upon which a prediction can be made as to the gypsy moth problem to be expected during the following year. A total of 56 communities requested and received egg mass surveys.

In anticipation that certain communities would find that, as a result of the egg mass surveys, control would be warranted in 1983, Memorandums of Agreement were distributed. The purpose of the Agreements was to determine those communities anticipating a spray program and agreeing to follow Departmental policy, i.e using Bacillus thuringiensis as the control agent. (Note 1983 Policy Recommendations in Appendix). Twelve agreements were received, thus making those communities eligible for either reimbursement from the State for ground

MASSACHUSETTS
CITY AND TOWN LINES

MAP A



GYPSY MOTH DEFOLIATION 1982
1,379,735 ACRES

Department of Natural Resources CMB

spraying or from Federal funds for aerial spraying. As of the date of this writing nine communities have submitted Financial Status Reports indicating a total expenditure of $66,112.90. Two of these communities submitted vouchers totalling $24,713.55 for aerial spraying. The remaining were for ground spraying activities and totalled $41,399.35. They will be reimbursed for 50% of the above costs. Altogether a total of 53 communities sprayed for gypsy moth in 1982. Forty four of these communities resorted to chemical control.

Park Spraying

Bureau personnel using the Bureau mist blower spent two days spraying where needed in Nickerson State Park. Bacillus thuringiensis was used and applied at the rate of 12 BIU, a strength found to give better control with one application rather than two. Good results were obtained.

Spraying also took place in spots where needed at Mohawk State Park, Beartown State Forest, Pittsfield State Forest and in the area of the Visitors Center at Mount Greylock.

REPORT BY THE SENATE COMMITTEE ON POST AUDIT AND OVERSIGHT

Early in 1982 and prior to passage of the budget by the Legislature the activities of the Bureau, with particular emphasis on the gypsy moth, were reviewed by the Senate Post Audit and Oversight Bureau. The following is a summary of their report and their recommendations:

Summary

"The gypsy moth population rises and falls with a cycle of about seven years. Though in the words of experts the gypsy moth does not present a major environmental hazard, the scope of last year's outbreak has resulted in statewide concern."

. . . .

"This report addresses the major issues regarding state and local intervention in controlling the gypsy moth: the chemical/biolgical issues, budgetary concerns, and projections for this spring's outbreak. The report reviews the FY 1982 budget supplement request of the Division of Forests and Parks (Department of Environmental Management), and is presented for consideration in the development of the FY 1983 budget."

"In 1981, nearly three million acres were defoliated by gypsy moths in Massachusetts. While this exceeded any previous year's defoliation, the Division of Forests and Parks does not anticipate an outbreak as large this year, though abnormal wind and temperature conditions in May could negate this decrease."

"Gypsy moth control programs were sponsored by 116 Massahusetts communities in 1981. Seventy communities received aid from the Bureau of Insect Pest Control in surveying the potential problem and assisting in measures to control the gypsy moth. Nearly $460,000 was spent by communities on control programs from the ground, and $1,168,000 was spent on aerial spraying."

"A November 1981 survey of 155 cities and towns showed that $3,351,872 was either appropriated or requested for appropriation for 1982 suppression activities. Funds for ground spraying totaled $1,108,469, and the balance for aerial spraying."

"The current FY 1982 budget includes $100,000 to financially assist communities in their gypsy moth control activities. The Division has requested a supplement of $300,000 for this purpose to be used for biological control materials. The Division will establish priority for the assistance based on the 1981 Egg Mass survey."

"It is our recommendation that the supplement be granted to the Divison of Forests and Parks subject to the limitations which they have outlined in their request."

Recommendations

"1. Among the state agencies under review by this bureau, the Division of Forests and Parks has no superior in terms of staff professionalism, technical expertise and knowledge in its field. Those charged with the administration of the program have shown a commitment to the balance between public health, environmental safety and eradication of the gypsy moth. We recommend that the supplement be approved subject to the limitations outlined by the Division."

"2. This supplement should be recognized as a means of enabling the Division to promote the use of biological controls, both existent and manmade, on a temporary, though cyclical, increase in the gypsy moth population."

"3. The Division of Forests and Parks has requested $70,224 in order to complete its on-going study of effective control measures. We recommend that this funding be granted (item number 2120-1400)."

The full text of the Post Audit and Oversight Report can be found in the Appendix.

Field Testing

Two small projects directed towards control of the gypsy moth were conducted by Bureau personnel in the Hawksnest area in Brewster. The first, in cooperation with the Methods Development Center, U.S.D.A., was the application of various strengths of B.t. to five 5 acre plots. The strengths used were 12 BIU, 16 BIU, 20 BIU, 24 BIU and 32 BIU. Reslts based on foliage estimates showed that 20, 24 and 32 BIU strengths gave very good foliage protection. Egg mass counts will be made at a later date.

The second project was conducted as a result of a request from a company to test an idea which they had developed. They had impregnated a somewhat porous tape material with Fenvalerate, a synthetic pyrethrum. The thought was that if the tape were placed around the trunk of the tree it would eventually kill the gypsy moth caterpillars as they ascended or descended the tree.

Two hundred trees were banded and examined periodically during the gypsy moth feeding period. Although heavy kill was noted during the early instars the end result was that all of the banded trees were eventually severely defoliated. In the opinion of the investigator the product, when used against lower populations, shows some promise. Against populations such as those encountered in the Hawksnest area it was ineffectual.

Tree Mortality Survey

Doug Trefry

A question which invariably arises following a gypsy moth outbreak is "How many trees died due to the defoliation?" This was particularly true following the severe and extensive attack of 1981.

Reports of dead and dying trees statewide prompted a cursory examination of the woodlands across the state. This program needs several years of repeated evaluation for more definitive results. Unpublished research from another state indicates that mortality will increase and peak three years following heavy defoliation and decline for two more years before ending.

Predetermined sites were selected on a 12 mile grid statewide. A total of 56 sites with two 1/10 acre plots each were evaluated and reorded by the district supervisors. The number of years of successive defoliation and the percentage of defoliation for each year as well as stand composition and site condition were recorded. Mortality was recorded by species and as dominant, co-dominant or suppressed. Trees killed by other causes or less than 3"d.b.h. were not recorded.

The average mortality for the areas heavily defoliated for one year was 2.37%, for two years 10.5%, for three years 12.2%, for four years 17.9% and those areas that were defoliated for five years 20.2%. (See Table #1)

A total of 613 trees were recorded as dead. 28% of these were dominant or co-dominant trees. Of the 613 total 557 were deciduous and 56 coniferous.

TABLE 1

Percent Forest Tree Mortality Following Gypsy Moth Defoliation

District	After 1 yr.	2 yrs.	3 yrs.	4 yrs.	5 yrs.
1	0	14.8	13.6	12.1	N.D.*
2	12.0	27.4	16.5	11.5	16.0
3	0	3.7	9.3	N.D.	N.D.
4	0	9.3	15.8	9.0	N.D.
5	0	11.7	11.8	23.5	24.3
6	3.0	5.3	10.8	10.0	N.D.
7	3.05	12.1	12.7	N.D.	N.D.
8	0	0	7.4	41.3	N.D.
Ave.	2.3	10.5	12.2	17.9	20.2

*N.D. - NO DEFOLIATION.

Parasite Programs

Doug Trefry

Rogas lymantriae is a braconid parasite of the gypsy moth which has been introduced into the United States but not established. Its world distribution is limited to Japan.

The female is oviparous in the host. There are no fecundity data available at this time. The average adult wasp lives 17-21 days. Pre-oviposition period is 6-9 days. The parasite develops from egg to cocoon in 13-14 days. The mature larva pushes the unconsumed body contents out of the larval skin on the anterioventral surface and spins a cocoon within the host exoskeleton, called a mummy. The mummy is short, dorsally convex, and firmly attached to the substrate by the exuded host material. Emergence of the adult from the mummy occurs 8-10 days after coocoon development. Diapause of this species has been observed in the mature larva within the host mummy. High humidity appears necessary for increased survival of diapausing parasites. Rogas lymantriae prefers to parasitize late 3rd instar L. dispar larvae but development will occur in 2nd to early 4th instar larvae. This species is solitary and multivoltine in the laboratory, so an overwintering host is probably required in the field although no alternate host has been recorded in the world literature.

The gypsy moth is the only host which R. lymantriae successfully parasitized in the laboratory. Malacosoma americanum was attacked readily by R. lymantriae in the laboratory but the hosts died and no parasites were recovered.

Two-hundred fifty femal *R. lymantriae* per site, released at prime time (indicated by the presence of 2nd to early 4th instar gypsy moth larvae) should be sufficient for establishment, if establishment, is possible.

In cooperation with William Wallner, U.S.F.S Northeastern Forest Experiment Station, Hamden, Conn. a release of 1,600 adult Rogas was made in the Truro, Provincetown area of Cape Cod. The release date was May 31, 1983 when most of the host larvae were in the late second or early third instar. In this release area both the gypsy moth and the browntail moth are present. Browntail webs had been collected earlier and taken to the Hamden laboratory. Browntail moth over-winter in the larval stage. The larvae in the collected webs were used to evaluate Rogas parasitism of that species. Indications from the laboratory were that the adult Rogas had attacked the browntail larvae, however, it is yet to be seen if the Rogas life cycle will be completed on that species. It is hoped that the host will provide over-wintering for the parasite.

Fifty host trees for the gypsy moth and browntail were chosen to use for monitoring the Rogas in the release area. Each tree was burlapped to create a resting place for the host larvae. As of June 28, 1983 no Rogas mummies had been observed.

A second relese of the Rogas in planned for later in 1983 when the browntail larvae are in the first instars.

Anastatus dispar is an imported egg parasite of the gypsy moth. It is simple hosted with one generation a year. It was released by the U.S.D.A. until 1927 in eastern and central Massachusetts. The last release was on a line from Richmond, New Hampshire to Barre, Massachusetts to Norwich, Conn. Natural spread is slow due to the female being unable to fly. Based on gypsy moth egg masses collected and reared for several years from west of the Conneticut River the natural spread appears to have been stopped by the river. No Anastatus have been recovered from Cape Cod for the past several years and Dowden in his report of parasites on Cape Cod in 1965 found no Anastatus present.

Work continues by this writer in establishing this excellent egg parasite statewide. Gypsy moth egg masses were collected from areas of heavy parasitism and set out on Cape Cod and in Berkshire County after the eggs had hatched. The Anastatus will emerge at the time that the female gypsy moth is laying thenew egg masses. Egg masses will be collected from these release sites in late fall and early winter of 1983. They will be brought to the Stow facility and refrigerated for 30 days and then removed and hatched. Emergence of the Anastatus should occur about 6-7 weeks later if the gypsy moth egg masses were successfully parasitised.

In the spring of 1983, 1981 gypsy moth egg masses were collected and eventually set out in areas where no Anastatus have been found. Based on the Anastatus emergence at the Stow facility from the egg masses collected in the fall of 1982 there should be 75,968 adult Anastatus emerge from these egg masses. Cape Cod received 1208 egg masses, Berkshire County - 300 and Hampshire County - 473.

Eight sites in Berkshire County and eight on Cape Cod received parasitized egg masses in late June or early July 1982. Of these, Anastatus was recovered from four sites in Berkshire County and five sites on Cape Cod. In the areas of no recovery it is believed that the Anastatus emerged too far in advance of the gypsy moth egg deposition.

Research

The following is a Progress Report on research being conducted by the Entomology Department, University of Massachusetts in cooperation with this Department.

Development of a Gypsy Moth Management Program

J. S. Elkinton

S. A. Woods

Effect of B.t. application on nucleopolyhedrosis virus, NPV, epizootics

Efforts continued to understand the effect of B.t. application on the subsequent occurrence of NPV epizootics in gypsy moth populations. Last year's results in Brimfield and Lyme, Connecticut showed a definite suppression of NPV caused by B.t. application but there studies were done in very high density populations which mostly collapsed due to NPV in treatment and control plots alike. This year we chose plots representing a wider range of population densities. We have attempted to obtain more precise documentation of the timing of NPV mortality in these populations.

A total of 8 research plots were established in and around the Otis Air Force Base in Cataumet MA. Of these, 4 were treated with one application of B.t. at a rate of 12 BIU's per acre. The remaining 4 were left untreated. Six of these consisted of 40 acre square forested blocks. All measurements and sampling occured in the central 10 acres. The 2 remaining plots were diffuse study areas within large treated and untreated areas. The treated area was part of the area sprayed by the town of Falmouth within the Ashumet Pond residential area.

Egg masses were collected from all 8 plots in the spring prior to hatch. The egg masses were returned to the lab where they were weighed and allowed to hatch. A minimum of twenty larvae were separated from the egg masses and placed on artificial diet, incubated for 3 weeks, and virus mortality was noted at weekly intervals. In this way relative background virus loads were established for all study areas. Additional data such as percent hatch, total number of eggs per eggmass and average egg weight will be computed to further characterize the plots prior to treatment.

Larval sampling began shortly after hatch. Larvae were collected in the field in individual cups and returned to an insectary to be reared on artificial diet until death or adult emergence. These larvae were checked daily to give an exact date of mortality. In this way, a relative estimate of virus mortality can be established for each plot and a comparison of larval mortality rates for different collection dates should help to illuminate the effect that being held on artificial diet plays in virus expession.

In addition to establishing a relative and an estimated absolute percent mortality for each plot, it was felt that estimates of larval density would be invaluable in interpreting the dynamics of B.t. sprayed and untreated plots. Nine two by ten meter quadrates were established in each of 2 treatment and 2 control plots every other week. Two 2 x 2 meter subquadrats were examined and the total number of larvae below 6 feet was counted. All understory was removed from the 2 x 10 meter quadrat and plastic tarps were placed in the quadrat. The canopy was then sprayed with a botanically derived formulation of pyrethrin applied to the canopy from a back-pack mist blower. A one half hour minimum waiting period was allowed and all caterpillars which had fallen were then counted or collected for counting at a later date. Calibration of the technique was obtained by spraying several different trees, collecting fallen samples, felling the trees and then counting all remaining larvae. Approximately 13-14% remained in the trees following spraying.

Information on the larval stages will include: percent mortality due to virus, a larval density estimate taken every other week, a percent parasitism estimate and the age structure of larvae in the field.

Pupal density, number surviving to adult emergence, percent parasitism and percent virus mortality will be obtained through the analysis of pupae collected in established 4 x 10 meter quadrats. Additionally a large number of pupae were marked with an acrylic paint a minimum of 2 times during the pupal occurrence. A subsequent search for these pupae will give us an estimate of how many pupae are dissappearing altogether due to predation. Relative adult emergence will be obtained through male trap catches.

Although the results have not yet been tabulated for the year they seem to support those obtained last year. Viruslevels definitely seem suppressed in the B.t. plots compared to the control plots but it is to early to tell how big the difference will be in terms of egg masses per acre.

This comprehensive study will be followed at least through the spring of 1984 when post-treatment estimates obtained this past spring. Egg masses were collected and processed during the spring of 1983 from plots in Old Lyme, CT. This completes the data collection for those plots started in 1982. Final analysis of this data has not been completed at this time.

In addition to the work described above, data is being and has been compiled regarding virus loads of egg masses and larvae collected from different quality populations and different locations in the environment. It is hoped that this will help to illuminate the dynamics of the virus epizootics which would ultimately be of use in management schemes.

In the 1981 disparlure trials, differences in adult emergence patterns became apparent in comparing the DAR population with that of Wendell. The synchoronized peak of emergence found in Wendell has definite implications for potential use of disparlure. Trap emergence from several different populations this year will be used in comparison to the 1981 data to establish whether emergence patterns are correlated with population quality or some other factor. This data should be useful in understanding population quality differences and in fine tuning suitability of various control strategies.

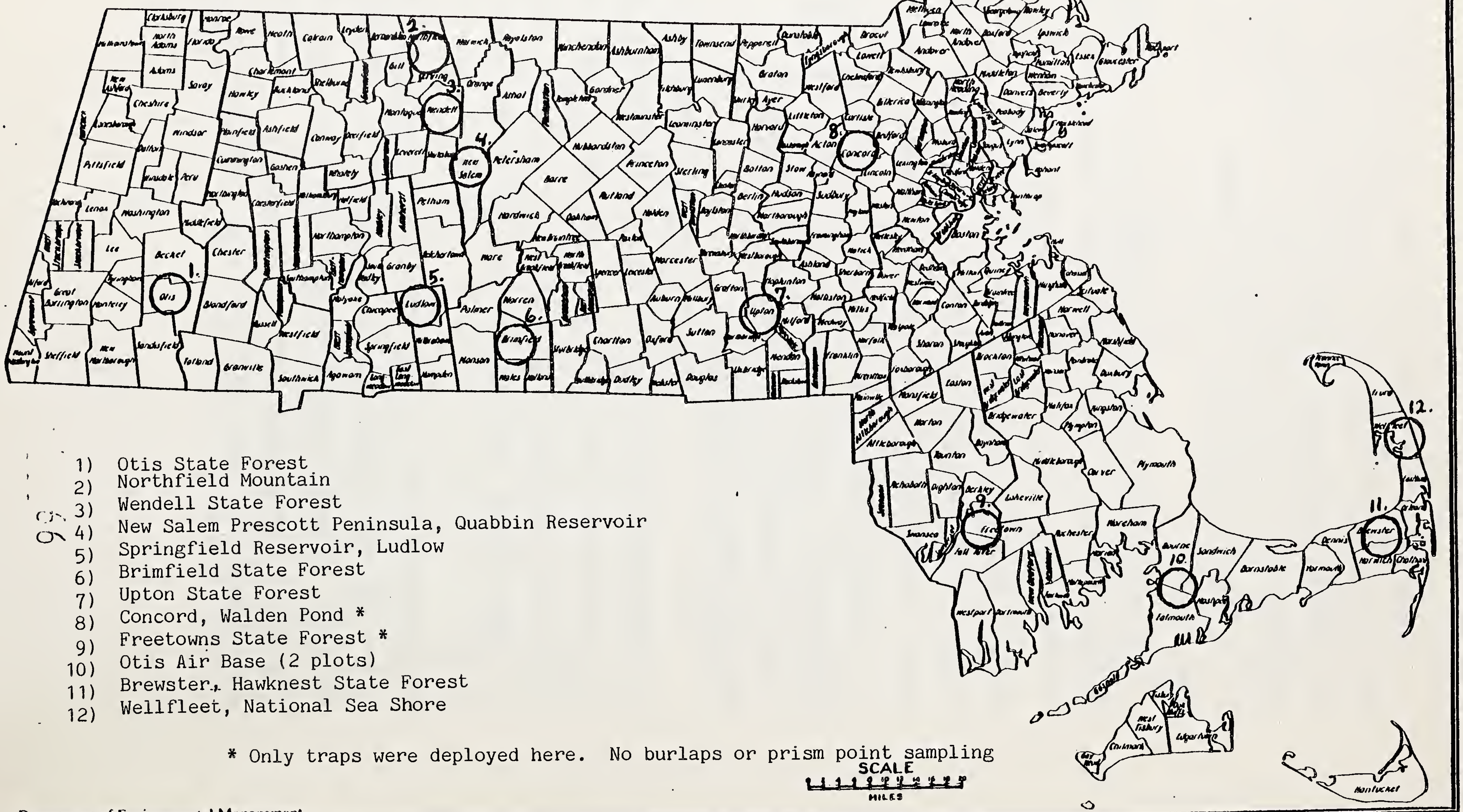
Monitoring Gypsy Moth Populations

A total of twelve 40 acre permanent sites have been selected throughout Massachusetts in state forest or town conservation land (Fig. 1) where we intend to closely monitor changes in gypsy moth populations on a long term basis. The sites have been selected so that they are widely dispersed across the state and are centered particularly in areas with a long history of gypsy moth problems. We have focused especially on sites where previous defoliations have appeared one or two years prior to a major gypsy moth outbreak across the state. We intend to deploy pheromone traps on each site yearly. We intend to conduct egg mass density, egg mass size, percent hatch, and determine pupal counts with burlap bands. Additional sites will

MASSACHUSETTS

CITY AND TOWN LINES

Fig. 1



1) Otis State Forest
2) Northfield Mountain
3) Wendell State Forest
4) New Salem Prescott Peninsula, Quabbin Reservoir
5) Springfield Reservoir, Ludlow
6) Brimfield State Forest
7) Upton State Forest
8) Concord, Walden Pond *
9) Freetowns State Forest *
10) Otis Air Base (2 plots)
11) Brewster, Hawknest State Forest
12) Wellfleet, National Sea Shore

* Only traps were deployed here. No burlaps or prism point sampling

Department of Environmental Management

be established next year. We have obtained prism point egg mass counts from most of their sites (table 1) and determined percent hatch in 1982. Pheromone traps have been deployed in all site and male trap catch will be obtained. Burlap counts of pupae, pupal sex ratio, pupal mortality, larvae mortality will also be obtained from these sites in August 1982. Egg mass counts will be conducted in late autumn after leaf fall. Once these sites have been surveyed, prism point trees labeled, and pheromone trap sites identified, we hope that continued monitoring of the site will require minimum labor involving visits once in the spring to deploy traps and once in the fall to collect males from traps, sample burlaps and count egg masses. The burlap bands will greatly enhance our ability to determine what is happening to the gypsy moth populations on these sites including changes in adult sex ratio that will help interpret differences between male trap catch and egg counts. Bob Campbell (1963) showed that the sex ratio favors adult females in low density sites and favors male in high density sites. In particular, sites that have recently collapsed due to virus will often have a high male trap catch yet a very low egg mass count because the sex ratio is skewed heavily in favor of males. In addition we can determine whether larvae that pupated beneath burlaps successfully emerged, were parasitized, predated or died of virus or some other cause.

Table 1. Egg mass counts and egg mass emergence in 1983 for selected permanent sites in Massachusetts

Site	Egg Masses Per Acre (March 1983)	Mean Number of Larvae Hatching per Egg Mass
Brimfield	646.13	121.40
Otis State Forest	94.29	209.12
Wendell	393.63	
Northfield Mt.	366.16	117.36
Upton State Forest	144.88	329.91
Quabbin	128.30	Not Available
Brewster	5,713.15	233.89
Wellfleet	1,896.00	Not Available
Springfield Reservoir	366.44	18/.81
Otis AFB, Plot #1	5,819.59	161.52

Oak Leaf Tier

Douglas Trefry

Branch samples from red oaks were collected in the fall of 1982 and the oak leaf tier eggs counted by using a microscope. The terminals of each 15" branch were counted. The samples from the original 10 plots set up in eastern Franklin County indicated defoliation would be in the negligible to light classification. Samples taken from southeastern Massachusetts indicated slightly heavier defoliation would occur but still in the light catagory.

Growth loss and mortality continue in eastern Franklin County. A computer program comparing sample plots and showing mortality and growth loss should be continued. The field data for this study has been completed by the foresters. This computer program will give a more accurate picture of what is actually taking place in the infested stands.

Mortality on the 10 original plots in the Warwick, Erving-Wendell State Forests is 17% based on the dead oaks present. When these plots were established in 1977 no mortality of the red oaks was found.

Branch samples will be evaluated in the fall and winter of 83-84 for a prediction of the 1984 defoliaiton. Defoliation in 1983 was as predicted.

Other Insect and Disease Problems

The Buck Moth, Hemileuca moia was noted to be building in many areas. In Ashburnham a particularly intense build-up was found. This insect can cause severe defoliation of oaks.

The European Larch Canker has been re-discovered in Maine. A survey conducted in Essex County revealed no new infestation. The disease was introduced into this country in the Hamilton-Wenham area and has evidently been eradicated since 1927.

Diplodia, a disease of conifers continues to expand in the Marthas Vineyard State Forest causing the death of all the pines it reaches.

Some homeowner complaints about insects in their homes were found to be beneficial insects in that they were gypsy moth parasites. Both Brachymeria intermedia and Phobocampe disparies were reported. Both appear to have the ability to sting and were the cause for the concern.

In western Massachusetts a birch leaf miner complex attacking white, yellow and gray birch and poplar defoliated 40,600 acres. The major defoliator in this complex was not positively identified but may have been Messa nana.

On Nantucket 250 acres of dead or dying pines were mapped. The trees are victims of the turpentine beetle.

The browntail moth is very heavy in the Provincetown-Truro area. Numerous complaints have been received by the local superintendent in Truro from people getting a rash after having come in contact with the caterpillars. There were also small infestations noted in Wellfleet and on Sandy Neck in Barnstable.

Outbreaks of the fall cankerworm have been noted in the Bellingham - Franklin area as well as in Brockton, Orleans and West Tisbury. On Marthas Vineyard 5,500 acres were defoliated by this insect.

Crew Activities

With the present lack of manpower, crew assistance to cities and towns has almost become a thing of the past. More and more the crews are becoming maintenance units for the Regions. Although this is the direction planned for the crews it is becoming more difficult to perform the various tasks with lack of personnel.

Despite the difficulties, the crews were able to perform a variety of tasks. Thirteen towns were assisted in the removal of 357 trees. Forty-three Departmental forests and recreation areas were assisted in a number of ways including logging, the removal or repair of hazardous tree, line clearance, snow removal, site improvement, egg survey work, spraying for gypsy moth, spraying for weed control and loading and hauling of slash. A total of 495 trees were removed from recreation areas.

ANNUAL REPORT

FISCAL YEAR 1983

BUREAU OF FIRE CONTROL

ANTONIO CASTRO, CHIEF FIRE WARDEN

GENERAL

The Bureau experienced one of the quietest years in recent memory in Fiscal Year 1983. There were 3,690 reportable forest fires listed in our statistics and 2,618.5 acres burned. This represents the lowest acre per fire ever (.71).

The Bureau, however, has maintained high visibility throughout the State with its continuing programs of prevention, training, pre-suppression and the Federal Excess Property Program. These facets of our activities are covered in greater detail under topic headings.

The Department, through the Department of Public Safety, has signed a Memorandum of Understanding with the Massachusetts Army Reserve National Guard through which they will provide helicopter water drops at wildfires throughout the state.

In Fiscal Year 1983 the opportunity to call upon the Mass ARNG did not present itself due to the exceptionally wet seasons we experienced. In the same manner, in the area of aerial detection, the Bureau did not call upon the vendor to supply aerial surveillance.

PRESCRIBED BURN

The Bureau worked with the National Guard and Air Force personnel at Camp Edwards to effect a prescribed burn of their impact range. The Bureau served as liason between the various factions needed to effect the reduction of the fire load at that hazardous location. The participants included Johnny Warnock, U.S.D.A. Fire Protection from

Broomall, PA, Jim Sain, Fire Protection Specialist, from North Carolina Forestry, Bill Paterson, Assistant Professor at U. Mass, Bruce Humrickhouse and Dwight "Ike" Anderson from Minnesota Forestry Department, Chief Ray Porter of the Otis Air Force Base, Colonel MacNamara, Fire Marshal at Otis, Adjutant Generals Vahan Vatanian and Anthony Spadorcia, and numerous other army support personnel. The town Fire Chiefs of Bourne, Sandwich, Mashpee, and Falmouth also participated in the preparations along with Chief John H. Jenkins of the West Barnstable Fire Department.

The Bureau also contributed its men and equipment from Region One's four fire districts.

The first attempt to burn the 1,340 acres that were untouched by the May 1982 fire was in January of 1983 after numerous meetings with the aforementional personnel and the completion of the prescription for the burn prepared by Professor William Paterson.

This first attempt to burn the area was aborted after several ignition attempts were unsuccessful. There was a sneak Cape Cod snow storm the previous day which produced a dusting of the impact range. The predicted burn-off of snow cover did not materialize to provide a satisfactory burn. There were two ignition attempts to effect the burn but both failed.

The second attempt to burn the area occured in April but not until several hearings were held to satsify objections of neighbors, and meet DEQE and MEPA requirements.

The prescription called for site preparation namely bulldozing of fire breaks around the area to be burned; fire fuel moisture between 15-19%, wind speed 5-12 mph.

The burn was successfully accomplished without the use of any suppression equipment on the scene; there wasn't a single outbreak from the burn area. The helicopter equipped with the incendiary device started dropping pellets at 10:00 a.m. and we were able to burn off approximately 700 acres within the 4:00 p.m. deadline imposed by DEQE.

The military plans to burn off this area yearly, as required, to minimize outbreaks from the impacted area.

Their plans include the purchase of an incendiary devices such as were loaned by the states of North Carolina and Minnesota. The Bureau continues to support this effort by monitoring their weather station and verifying their weather computations. This latter factor, at their request, to allay fears that weather statistics were altered for the purpose of conducting firing operations into the impact range on days of high fire danger.

PREVENTION AND TRAINING

The training of Bureau personnel is an on-going program within the individual fire districts to sharpen the skills and improve the fire behavior knowledge of the year-round and seasonal personnel. Training sessions have also been conducted inter-district to familiarize personnel with specialized equipment, fuel load and/or topographic characteristics that may vary from one district to another.

Statewide training was instituted for Division personnel to qualify them as inter and intra state fire fighting crews. Instructors were drawn from the Department's branches utilizing their expertise wherever called for in the lesson plans of the Basic Firefighter and Fire Behavior courses.

The Bureau of Forest Fire Control in conjunction with the United States Forest Fire Service and its Northeast neighbors attended various conferences, seminars, and training sessions during the past fiscal year.

The Northeast Forest Fire Protection Commission is comprised of Forest Fire personnel and equipment from Connecticut, Massachusets, New Hampshire, New York, Rhode Island, Vermont, and the Provinces of Quebec, and New Brunswick from neighboring Canada. This commission is referred to as the "Compact". Whenever a wild forest fire rages uncontrolled and threatens to exceed the resources of a member state, other member states are prepared to respond with fire personnel and fire apparatus to assist in the suppression of wild forest fire. Annual training exercises are held in February to instruct compact crews in the latest advances in forest fire control and in how to react to emergency responses.

On September 21, 1983 the Compact Commission held a surprise simulated emergency response to a wild fire situation in Erving, MA and at Bethel, ME. Crews and equipment from Rhode Island, Connecticut, and New York responded to the Erving site. Crews and equipment from Massachusetts, Vermont, New Hampshire, Quebec and New Brunswick responded to the Bethel, ME site. This exercise proved very beneficial in terms of pointing out deficiences in the emergency response of the states that participated.

At the Northeastern Forest Fire Protection winter meeting held in West Lebanon, New Hampshire, on February 1-3, 1983, Chief Castro, Assistant Chief Bisceglia, District Wardens Bennett, Sakaske, Frieswick, Moulton, and O'Leary received training in Wild Fire Behavior, Aerial Water Drop Support, and the role weather plays in the suppression of wild forest fires. District Warden Bill Bennet also attended the Compact equipment training session. New Hampshire hosted this Compact session for all the member states.

The Massachusetts Fire Academy sponsored an Instructors Training Course on November 3 and November 10, 1982. Thirty (30) of the Bureau's fire personnel attended the two eight hour sessions in order to be certified in the proper use of visual aids, speech presentation, and lesson preparedness. This training will enable all fire personnel to properly present our Smokey the Bear Prevention lectures in the public schools, and prepare lesson plans at our training seminars.

The Massachusetts Fire Academy also sponsored Rural Water Supply training sessions in April, May and June at various locations throughout the state. Thirty Bureau fire personnel in conjunction with many of the rural community fire personnel benefited from this 16 hour water handling course.

The Northeast Forest Fire Supervisors meeting was held in Hyannis, MA on June 20-23, 1983. The State of Massachusetts, in conjunction with the U.S. Forest Fire Service sponsored this 17th consecutive summer meeting. The Northeast Forest Fire Supervisors are comprised of twenty northeast states. The province of New Brunswick, Canada, attended as an invited guest.

This year's theme, "Cro-Man to Pac-Man to Fire-Man" signifies the integration of computers into all facets of wild fire activities. There was considerable discussion on railroad-caused fires and the proper reporting of these fires.

The Bureau was well represented at the three-day session. Gilbert A. Bliss, Director of Forests and Parks for the Commonwealth gave the formal welcoming address on Tuesday, June 21, 1983. Also in attendance was Assistant Chief Bisceglia, District Wardens Messer, Frieswick, Bennett, Hannon, Tripp and Harrison. Mrs. Castro was the hostess for the wives and children who attended with their husbands.

The Northeast Forest Fire Supervisors are charged with the responsibility for stimulating and promoting the development and use of specialized forest fire equipment, better techniques in fire prevention, pre-suppression, suppression, and improved training. Safety methods to attain and maintain the overall objectives of the least number of fires and the least damage to natural resources and property at the least cost.

Twelve district wardens and fire patrolmen attended training sessions throughout the state sponsored by the Massachusetts Criminal Justice Training Council. This was an intensive training session in the proper interpretation of all the Massachusetts General Laws pertaining to law enforcement. Special instruction was also provided in the proper use of fire-arms with a one day session at the firing range. The training program will enable our fire personnel to be deputized Natural Resource Officers with all the legal powers to enforce state regulations pertaining to forest fire and forest cutting laws and regulations, particularly the Slash Law.

In-house fire training sessions play a large role in the overall function of the Bureau of Fire Control. Chief Castro places a great emphasis on continual training sessions for all fire personnel and Bureau of Recreation personnel in the basic fire fighting techniques.

Each fire district warden spends many man hours in teaching fire behavior, fire safety, hose laying and handling, use of water pumps, drafting water from ponds and water holes, proper use of fire trucks, brushbreakers, winches, hose maintenance, hose fittings, vehicle and equipment maintenance. Tower Observers were trained in the proper use of an alidade; triangulation with adjacent towers to pin point exact locations of incipient fires, including other important segments of tower training such as map reading, radio communication procedures between ground personnel, rural fire dispatchers and inter-tower fire location information.

Each district provides training for park personnel in basic fire fighting techniques, first responder courses and CPR courses.

Many small rural communities whose fire fighting personnel are either call or volunteer firemen find it difficult to attend fire training courses at the Mass. Fire Academy in Sudbury. Our Bureau takes up the slack with evening fire training, film viewing session, brush breaker use (districts where applicable), small forest fire tool handling and many other technical fire fighting procedures.

The Bureau of Fire Control strives to maintain a high degree of efficiency in all phases of forest fire training. The success of this program is measureable from the feedback of communities receiving assistance who have praised the quality of the Bureau's aid.

SAFETY COMMITTEE

A state safety committee comprised of bureau chiefs and chaired by Chief Castro was established by Director Bliss to formulate safety procedures and safety practices throughout the Division of Forests and Parks. The subcommittee members are: Assistant Chief Patsy Bisceglia, Robert Freedman, Douglas Trefry, Todd Lafleur and Michelle Plourde. Safety inspection forms and safety deficiency reporting forms are being formulated by this committee to establish overall statewide safety practices. Each regional supervisor has appointed a regional safety officer and a regional safety committee consisting of a member from each Bureau under the Division of Forests and Parks with representation from the 3 bargaining units representing all division personnel. A final report of this committee will be completed by September 1983.

Chief Castro and Assistant Chief Bisceglia served on a committee to rewrite the employee evaluation form which is now being used by all division personnel. Edward Carr, Assistant Personnel Administrator chaired this committee.

DETECTION

The detection system in Massachusetts is still provided by a combination of aerial observation and ground observation stations. In the counties east of Worcester County, ground observation stations are maintained and operated by the Commonwealth. This system is backed up during periods of high fire danger in Plymouth and Barnstable Counties by county-supported planes. In the western counties and including North Worcester County, a combination of ground observation and aerial observation are utilized and supported entirely by the state.

The past flight pattern for D.E.M. Region 3, Southern Worcester County, has been eliminated in order to increase the frequency of aerial detection flights over Northern Worcester County which has a high forest fire frequency. There were two additional towers manned in South Worcester County in order to shorten flight patterns. Flight pattern #3 limitations includes West Boylston to Fitchburg, northwest to Royalston, and South to Hardwick, all in the Northern Worcester County.

Flight Pattern #4 in Franklin, Hampshire and Hampden Counties, D.E.M. Region 4, has been similarly condensed from an "A" type aerial flight pattern to rectangular flight pattern. This extends from Russell in Hampden County north to Leyden in Franklin County, Northwest to Heath in Franklin County, and proceeds south to Blandford in Hampden County.

Flight Pattern #5 in Berkshire County, D.E.M. Region 5, remains the same as in the past. From New Marlboro, North to Clarksburg, Northwest to Williamstown, it then proceeds South to Sheffield. On extreme fire danger days a fourth flight pattern will be activated between Northern Worcester County and the existing flight pattern in D.E.M. Region 4. This in effect will give us the maximum Forest Wild Fire protection for our woodlands and our homeowners.

Due to the high poplulation density of Massachusetts, the number of wild fire incidents is very high; 8,000 to 10,000 in an average year. As a result, aerial observation is not proving to be particularly effective, with the possible exception of Berkshire County. In the Connecticut Valley and Worcester County areas, there are just too many fires occuring to make aerial detection a practical method of detecting wild fires.

This past year the district wardens in Worcester, Hampden, Hampshire, Franklin and Berkshire Counties conducted a survey of the Fire Chiefs in these counties to determine their preference - towers vs. aerial detection. The overwhelming consensus of the chiefs was to return to detection of fires through fire tower observers. Use of airplanes was recommended under certain situations.

Twelve of the 22 fire towers strategically located throughout the five western counties are manned and operational at this time. A decision to reopen closed towers will depend on sufficient funds for man-power and tower rehabilitation.

We do spend considerable time training fire tower observers and also invite rural fire communities to participate in this type of fire detection which pin points the exact location of fires. This vital information is relayed to the rural fire dispatchers who in turn activate suppression operations in their particular town. Over 140 fire personnel from six rural communities in fire district #10 received fire tower observation training.

The Bureau plays a very important role in assisting many small rural communities in all types of wild fire training. Immediate detection and response to incipient wild fires contributes to the reduction of acres burned and property loss.

In keeping with Director Bliss' request for sustained fire patrol activity, the Bureau's forest fire patrolment have logged a total of 504,165 miles. This represents an increase of 129,224 miles over 1982 totals.

Loggging operation inspections have also increased from 574 in 1982 to 1,067 in 1983.

PRE-SUPPRESSION AND PREVENTIVE MAINTENANCE

The construction and maintenance crew stationed at Brimfield State Forest contributed many man hours to the Bureau of Fire Control rehabilitating many tower cabins, installing antennas and guy lines, connecting telephone and electric power lines and installing weather instrument recorders throughout the Commonwealth. Cabins for the towers are fabricated at Brimfield State Forest and assembled at various fire tower locations.

In fire District 6, a new roof and interior renovations were done to the Chelmsford Tower, the Fall River Tower in District 3 and the Kingston Tower in District 2.

The Pelham Tower Cabin in District 10 was replaced with a newly fabricated cabin. A new platform was constructed on the Tolland Tower in District 11. To curtail a rash of vandalism at the Chelmsford Tower in District 6, the construction crew installed shutters over windows to protect the Tower Cabin from flying missiles.

At Goshen District 10, Sunderland District 9, and Monterey in District 12, the construction crews spent many man hours on telephone and power line construction, replacing transmission wires and telegraph poles.

The construction crew installed and repaired antennas at the Regional Headquarters in Carlisle; they also installed new weather instruments on the Carlisle Headquarters in Region II, and at Pittsfield State Forest in Fire District 12. There was antenna repair work performed at the Fall River Tower in District 3, the Pelham Tower in District 10, and the Wachusett Tower in District 8. John Motroni, Construction Supervisor, and his skilled three man crew have gone about the performance of their duties in a very competent and skillful manner.

Many of the steel structured towers throughout the state are painted and maintained by the district fire personnel assigned to the various areas.

The Bureau of Fire Control fire crews opened up 269.25 miles of fire access roads on state owned lands throughout the Commonwealth. This is an increase of 47.25 miles from the previous fiscal year.

Road grading, spreading of gravel, soil erosion prevention, widening of narrow fire lanes and cutting of brush received high priority this past fiscal year. Many man hours were spent dredging, cleaning, and clearing fire water holes. The fire crews continue to assist forests and parks recreation crews with a variety of park maintenance projects, which enhance recreational activities. Conversely, forest and park personnel continue to assist Bureau of Fire Control crews at working fires and as relief personnel on towers.

RURAL COMMUNITY FIRE PROTECTION PROGRAM

The Massachusetts Fire Academy provides forest fire training for 210 communities with a population of under 10,000 people. Under the Rural Communitities Forest Fire Protection Program the Federal government allocates $24,000 to the Commonwealth of Massachusetts for this program. The Department of Environmental Management, Bureau of Forest Fire Control has been designated to administer this program.

A curriculum was established based upon the preference the rural communities indicated in the survey. Training was provided to the town upon their request.

A separate Accomplishment Report by the Massachusetts Fire Academy is included in this report.

FEDERAL EXCESS PROPERTY PROGRAM

The Federal government authorized the Department of Agriculture - United States Forest Service to enter into an agreement with the Commwealth of Massachusetts and its designee, the Department of Environmental Management, Bureau of Fire Control, to administer the Excess Property "Pass Through" Program. This program has generated a tremendous amount of interest from the rural fire communities in the Commonwealth.

Since the inception of the program in November of 1980, 127 rural communities have entered into agreements with the Bureau of Fire Control to accept excess federal property under the terms set forth by the U.S. Forest Fire Service, the General Service Administration, and the Massachusetts Bureau of Fire Control. This reflects an increase of 37 communities. This is an increase of 37 transactions with an increase of 16 rural communities serviced from our last fiscal year. Property transferred to these communities include two Ward LaFrance fire fighting apparatus at a value of $55,584, tank trucks, tractors, wreckers, four wheel drive weapons carriers, pick-up trucks, power generators, compressors, house trailers, floor jacks, trailers, tires, and an assortment of small tools.

This reflects a total outlay value of $530,539 that has been transferred to the 56 rural fire communities since the program's inception in 1980.

The process of acquiring material starts with the fire chief of a town when he submits his letter requesting participation together with his prioritized list. Request for equipment must be accompanied with justification sheet which indictes the need for and how it will benefit his community and how it will be housed. We then send the chief a copy of our agreement which he signs and returns for the signatures of the Director and Commissioner.

When the desired item is available and the chief agrees to accept it, an addendum is filled out with the pertinent information of the item and signed by the chief. Copies of the agreement, addenda and receiving GSA copy are sent to the Chief, District Fire Warden and Excess Property Coordinator with the original remaining in the Boston Office.

The in-house machinery to administer the program includes five Regional Excess Property Coordinators who have the responsibility of maintaining the flow of records from the field to Boston in the same way the flow is from Boston to the Excess Property Coordinators.

The District Fire Wardens have direct contact with their fire chiefs and he in turn will start the process from the town to the Regional Coordinator.

The Bureau has administered the Excess Property Program since the 1960's when the U.S. Forest Service enabled the states to use their high federal priority to acquire property that would improve the state's fire protection capabilities.

The present dollar value of our Excess Property Inventory is over $1,684,818, an increase of $319,818 from fiscal 82. The items acquired range from small fire fighting equipment to heavy vehicles modified to fight wild forest fires, generators, compressors, tank trucks, tires, shop equipment, small tools and protective clothing.

The program has enable most of the fire districts to obtain 2½ ton vehicles which have been converted to tank trucks thereby improving their service to the communities. Other items dispersed to the district include welders, portable generators, pumps, road graders, bulldozers, ½ ton and 3/4 ton vehicles.

Other bureaus have benefited from the program through direct use of equipment when they have qualified through U.S. Forest Service guidelines, e.g. the acquisition of 55 gallon drums which have been dispersed throughout the forested areas to maximize litter control in those areas of heavy user impact.

PREVENTION

Prevention programs have traditionally been conducted within each fire district. Prevention programs in the elementary schools, kindergarten through the sixth grade increased by 47 visits from the prior fiscal year. This fiscal year we conducted 590 Smokey the Bear prevention seminars. Smokey the Bear still remains very popular with younger age groups.

The Bureau was well represented during the Annual Fire Prevention Week activities hosted by all municipal fire departments. Integration of Smokey the Bear with other community fire personnel in presenting prevention education and prevention techniques plan an important role in the Bureau's overall fire prevention program.

Bureau equipment and our personnel chaperoned Smokey the Bear at many parades, festivals, and numerous civic functions when called upon by local administrators and fire officials.

Each year the Bureau expends thousands of dollars to Smokey the Bear prevention material. Each district warden orders a supply of prevention material which best fits the particular area's needs. Prevention remains a key activity in the Bureau of Fire Control's service to the communities.

Another important prevention program is the issuing of criminal citations and warnings to individuals in violation of the Massachusetts Forest Fire Rules and Regulations. In 1983 there was a drop in the number of citations and complaints due to a very rainy fire season.

The inspection of logging operations takes up a great deal of the district fire warden's and forest fire patrolman's work day. The new Forest Cutting Practices Law has increased the responsibility of these key personnel. In Fiscal Year 1982, we had 574 logging operations.

This past fiscal year we inspected 1,067 logging sites. This increase of 493 inspections reflects the active role the Bureau is playing to insure that the letter of the law is followed on Commonwealth and private landowner woodlots. Fire District #12 experienced the larget increase in inspections over Fiscal Year 1982. The inspection system serves a two-fold purpose; it establishes uniform fire minimizing standards with loggers, and it familiarizes our fire personnel with fuel conditions and terrain they might not ordinarily be aware of.

The Bureau continues to periodically distribute fire prevention and training material to the Fire Districts for integration into their programs.

Committees have been formed to coordinate the various responsibilities of the Bureau. They include: Training, Prevention, Federal Excess Property, Weather, Communications, Inventories, Reports, Equipment, Law Enforcement, Safety, Supplies, and Uniforms.

The Department has had a long standing policy that though the local cities and towns have the statuatory responsibility for all fires that occur within their borders, either state or private, we, the Department automatically respond to fires occurring on land under our control to assist. Though we are not statutorily responsible, it has always been felt that we are morally obligated to the communites to do this. It is my feeling that the same policy might be extended to cover all forestland under Commonwealth control.

Though there have been restraints throughout the Commonwealth due to budget cut-backs, this has been a very positive year in all phases of forest fire activity.

BUREAU OF FIRE CONTROL

EXCESS PROPERTY ACQUIRED AND TRANSFERRED JUNE, 9183

Property Acquired	Cost of Property
Maintenance and Pre-Suppression - Property for the Bureau of Fire Control (Tools, Snowshoes, Paint, Metal Ammo Boxes Barrels, Binoculars, Tires, Hand Trucks, Ski Hoist, Map Cabinet, etc.)	$ 8,103
Work Gloves, Cotton 82,861 pairs @ $1.97/pr. (For the Bureau and the "Pass Through' Program)	163,236
Sleeping Bags (For Bureau Personnel on Training Sessions)	1,818
Truck Fire Fighting (Will be "Passed Through" to a Rural Community)	13,500
House Trailer 60' x 12' (Mass. Fire Academy)	1,300
TOTAL EXCESS PROPERTY ACQUIRED AND TRANSFERRED JUNE, 1983	$ 187,957

Rural Community "Pass Through" Program: No enrollments in June

TOTAL ENROLLMENT TO DATE IN "PASS THROUGH" PROGRAM - 122 Communities

RCFP - FIRE ACADEMY

ACCOMPLISHMENT REPORT

For Period 7/1/82 - 2/28/83

TOWNS SERVED	PROGRAMS	STUDENTS
67	92	2,339

SUMMARY BY DISTRICTS

JULY 1982 - JUNE 1983

DISTRICT	NO. FIRES	ACRES	COST
1	279	123.50	$ 23,621.05
2	312	105.50	7,003.50
3	409	250.75	18,560.50
4	328	213.25	11,447.00
5	106	104 -	3,899.00
6	246	186.90	7,505.00
7	196	212.75	12,654.00
8	434	177.15	24,974.72
9	154	116.20	13,536.43
10	308	212.25	16,064.00
11	621	479.95	24,421.00
12	159	223.75	22,242.00
14	138	213 -	8,473.00
	3,690	2,618.95	$194,401.20

SUMMARY BY CAUSES

JULY 1981 - JUNE 1983

ISTRICT	LIGHT	CAMPER	SMOKER	DEBRIS	INCEND.	EQUIP. RISE	R.R.	CHILDREN	MISC.	TOTAL
1	1	12	20	31	51	11	2	71	80	279
2	-	1	4	47	152	2	-	50	56	312
3	1	8	19	40	202	2	-	89	48	409
4	-	5	1	28	76	1	-	194	23	328
5	-	3	-	14	6	-	-	66	17	106
6	-	4	3	28	6	1	1	103	100	246
7	-	1	6	54	67	-	14	44	10	196
8	-	10	29	100	21	9	18	70	177	434
9	-	5	21	50	27	4	30	15	2	154
10	-	32	46	89	68	17	4	43	9	308
11	-	71	32	172	136	5	26	168	11	621
12	-	-	-	23	118	2	5	7	4	159
14	-	1	2	5	18	1	3	105	3	138
	2	153	183	681	948	55	103	1,025	540	3,690

SUMMARY BY MONTHS
JULY 1982 - JUNE 1983

MONTH	NO. FIRES	ACRES	COST
JUNE	85	26.90	$ 3,498.50
JULY	335	150.45	18,279.00
AUGUST	152	53.15	7,309.14
SEPTMEBER	157	50.40	4,777.00
OCTOBER	327	178.15	16,758.33
NOVEMBER	321	255.45	16,248.65
DECEMBER	90	24.45	2,417.00
JANUARY	73	22.75	2,396.50
FEBRUARY	50	19.70	1,877.95
MARCH	560	530.25	36,043.63
APRIL	1,102	1,052.65	64,770.25
MAY	438	254.65	20,025.25
	3,690	2,618.95	$194,401.20

FIRES (SIZE BY DISTRICT)

JULY 1982 - JUNE 1983

DISTRICT	A	B	C	D	E	F	TOTAL
1	241	37	1	-	-	-	279
2	280	32	-	-	-	-	312
3	258	150	1	-	-	-	409
4	246	81	1	-	-	-	328
5	88	16	2	-	-	-	106
6	128	117	1	-	-	-	246
7	105	87	4	-	-	-	196
8	346	87	1	-	-	-	434
9	122	30	2	-	-	-	154
10	219	86	3	-	-	-	308
11	471	142	8	-	-	-	621
12	20	137	2	-	-	-	159
14	41	92	5	-	-	-	138
	2,565	1,094	31	-	-	-	3,690

NO. OF FIRES (TYPE OF AREA)

JULY 1982 - JUNE 1983

COM.FOREST	NON-COM. FOREST	NON-FOREST	NONFORESTED WATERSHED	TOTAL
375	2,027	1,261	27	3,690

ACREAGE BY DISTRICTS

JULY 1982 - JUNE 1983

DISTRICT	A	B	C	D	E	F	TOTAL
1	60.25	53.25	10 -	-	-	-	123.50
2	64 -	41.50	-	-	-	-	105.50
3	64.50	146.25	40 -	-	-	-	250.75
4	61.50	106.75	45 -	-	-	-	213.25
5	22 -	47 -	35 -	-	-	-	104 -
6	31.90	140 -	15 -	-	-	-	186.90
7	26.25	146.50	40 -	-	-	-	212.75
8	59.15	100 -	18 -	-	-	-	177.15
9	15.70	40.50	60 -	-	-	-	116.20
10	54.75	117.50	40 -	-	-	-	212.25
11	80.20	196.75	203 -	-	-	-	479.95
12	5 -	193.75	25 -	-	-	-	223.75
14	10.25	125.75	77 -	-	-	-	213 -
	555.45	1,455.50	608 -	-	-	-	2,618.95

ACREAGE BY CAUSES

JULY 1982 - JUNE 1983

CAMPER	SMOKER	DEBRIS	MCEND.	LIGHT	MISC.	CHILDREN	R.R.	EQUIP.RISE	TOTA
76.25	99.85	382.35	763.85	.50	336-	734.75	169.55	55.85	2,618

ACREAGE BURNED (TYPE OF AREA)

JULY 1982 - JUNE 1983

DISTRICT	1	2	3	4	5	6	7	8	9	10	11	12	14	TOTAL
COM. FOREST	-	-	14	-	66-	-	170-	5.50	62.15	81.75	156.50	74-	11.50	641.40
NON-COM FOREST	123.50	104.05	52.75	200.75	30.75	184.40	9.75	123.15	54.05	5.75	146.85	71.75	186.50	1,294 -
NONFORESTED WATERSHED	-	-	-	-	5.25	-	3-	8.25	-	2-	-	2.50	-	21 -
NON - FOREST	-	1.45	184-	12.50	2-	2.50	30-	40.25	-	122.75	176.60	75.50	15-	662.55
TOTAL	123.50	105.50	250.75	213.25	104-	186.90	212.75	177.15	116.20	212.25	479.95	223.75	213-	2,618.95

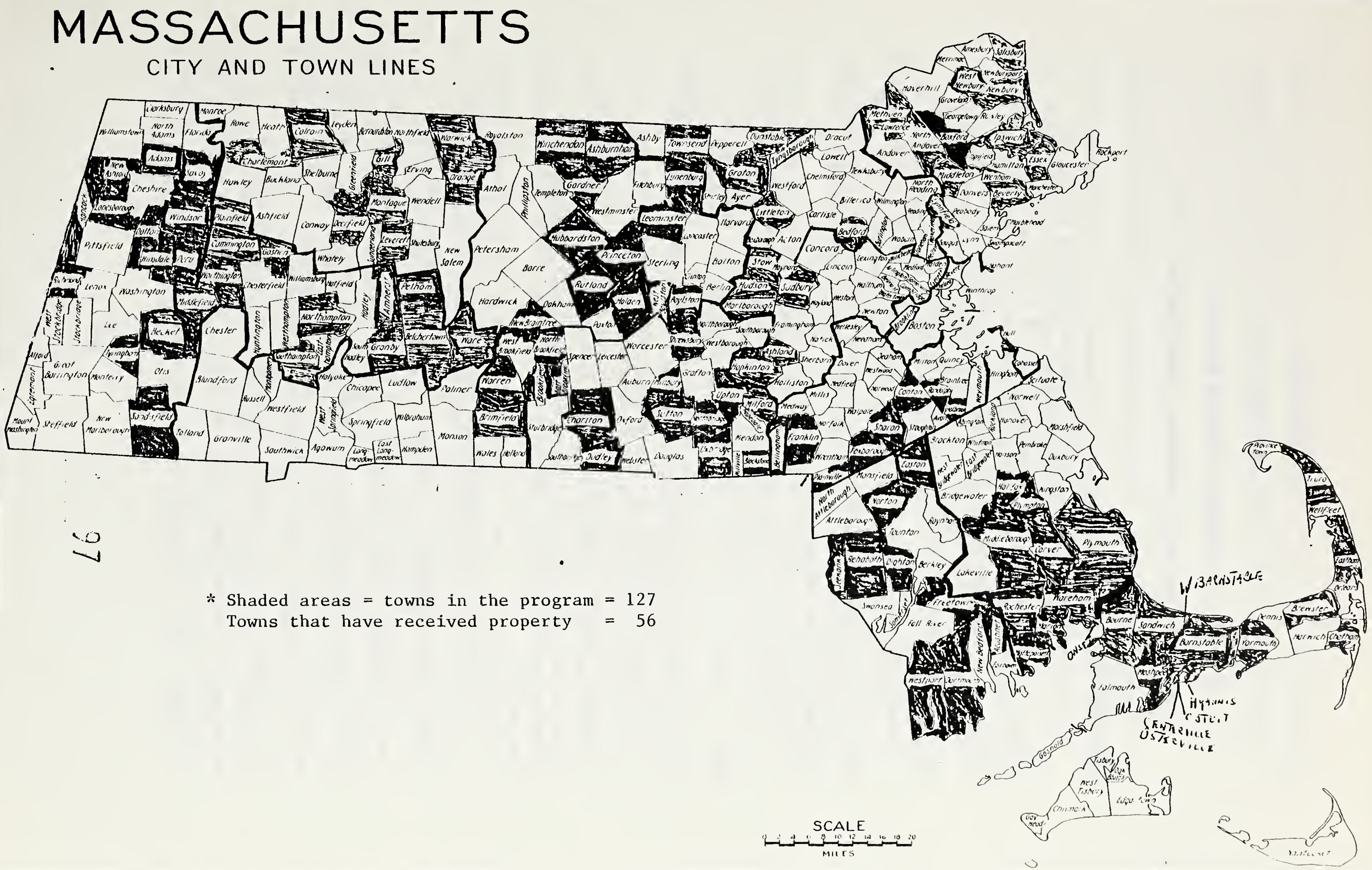
SUMMARY OF ACTIVITIES - FY 1983 - BUREAU OF FIRE CONTROL

	1	2	3	4	5	6	7	8	9	10	11	12	14	TOTAL
Miles Patrolled	55699	40062	36,484	30,861	41,713	8,530	45076	44655	38649	38571	59331	32449	32025	50410
# Warnings & Citations	72	35	6	0	12	3	11	3	0	22	22	8	25	219
# Prevention Programs	31	68	50	64	106	24	47	34	10	43	29	33	101	590
# Logging Operations Ins.	0	39	70	49	34	69	89	37	45	76	65	455	39	1067
# Fires Detected - Towers	214	209	114	203	117	15	61	13	6	298	100	0	14	1364
Aircraft	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*# Acres Burned	68.75	139.5	209	231.50	96.50	116.0	183.25	169.0	106.65	101.0	519.0	116.35	90.25	2046.75
*# Fires Reported	78	196	406	418	213	138	152	225	98	122	595	101	74	281.6
# Truck Runs-Div. Land	46	19	3	12	0	0	0	0	0	0	10	4	2	96
Other Land	5	13	6	8	0	0	19	2	4	15	14	1	28	115
Miles of Access Rds Open	3.25	59.8	37.5	17.0	40.0	3.5	3.25	31.0	4.0	33.0	8.0	32.20	0	269.25
# Times Assistance Requested	19	21	9	9	10	8	19	62	3	130	172	6	61	529
# Assists to Cities & Towns	15	15	9	9	10	8	19	15	3	87	172	6	61	429
Manpower	18	15	9	9	10	8	21	11	3	60	72	1	61	298
Equip.	14	2	9	9	10	8	20	7	3	16	68	1	51	218
Pumps	13	3	9	9	10	8	12	1	3	16	16	1	27	128
Hose	6	7	9	9	10	8	13	0	3	16	16	1	25	123
Natural Disaster	0	0	9	0	0	0	0	0	0	0	0	1	0	1
# Tr'g Programs-In-house	17	39	17	61	14	15	20	27	33	84	15	71	27	440
Other	11	21	5	24	4	8	0	5	12	19	16	10	2	131

*Total fires and acreage before redlining to exclude urban areas.

*Total fires and acreage before redlining to exclude urban areas.

FEDERAL EXCESS PROPERTY "PASS THROUGH" PROGRAM



* Shaded areas = towns in the program = 127
Towns that have received property = 56

ANNUAL REPORT

FISCAL YEAR 1983

BUREAU OF URBAN SERVICES

ROBERT FREEDMAN, COORDINATOR

URBAN SERVICES

The establishment of a Bureau of Urban Services within the Division of Forests and Parks became reality when the Legislature appropriated $742,000 for Bureau operating expenses for Fiscal Year 1984. Although this is a significant reduction from the Governor's recommendation of $1,147,794, delayed openings of some of the Heritage State Parks, either for funding or construction reasons, has lessened the impact of the budget cut.

Also important to the operation of the Bureau and the Heritage Parks is approval of $1½ million in the Fiscal Year 1984 Capital Outlay Request for furnishings and equipment for the parks. Included in the request are items for grounds and buildings maintenance, building furniture, electronic security devices, etc. The Capital Outlay Request also includes funds for "Phase II" Heritage Park construction.

In addition to the operational and capital budget submissions, several other management planning projects were undertaken or completed during Fiscal Year 1983. A management agreement between the Greater Lowell Regatta Festival Committee and the Division of Forests and Parks was signed by both parties. The Committee, a Lowell - based civic organization will manage the sailing program at the new boathouse on the Merrimack River as soon as construction is completed in January, 1984. A use and occupancy permit was negotiated with the

University of Lowell Athletic Department for use of the boathouse as headquarters for the University Varsity crew program. In exchange for space in the boathouse, the University has agreed to conduct a public rowing program every summer which will include both basic instruction in competitive rowing as well as a schedule of races on the Merrimack River. As a means of contributing to the pool of potential applicants for park interpreter positions, the Division of Forests and Parks initiated and taught a course in park interpretation at Mt. Wachusett Community College in Gardner with the ultimate goal of establishing a park interpretation major, or certification, at the College. To attract more students, the course will be offered in the Evening Program. The College has also agreed to continue the course with its own faculty - an indication of the College's favorable reaction to the course and the idea of incorporating the field of interpretation in the College curriculum.

During Fiscal Year 1983, the Division of Forests and Parks continued to review design plans and specifications for the Heritage Parks scheduled for construction during Fiscal Years 1983 and 1984. A design checklist was followed for each park to insure that management concerns were addressed during the design process. Specifications were also reviewed to insure that only standardized site furnishings were included in the final design. Interpretive exhibit design contracts also got underway during this year and park management issues have been addressed in the design contracts and will be followed up as exhibit designs are developed by the consultants. In addition to design review, a contract for the purchase and installation of electronic intrusion detection systems was prepared by the Division for the eleven buildings in the Heritage State Park System.

Each building will be monitored on a 24 - hour basis by a private vendor and all alarms received in the central station will be reported to the local police. The contract will be bid in the fall of 1983.

Lowell Heritage State Park completed its third full year of operation. Several design projects were completed this year - the new boathouse and bathhouse restoration; extension of the landscape improvements at the Vandenberg Esplanade; and the design of an urban garden and plaza (with an elaborate display fountain) adjacent to the park visitor's center (Mack Building) in downtown Lowell. Construction of the latter two projects got underway this year.

The park's interpretive program continues to be a popular attraction for visitors. The guided Waterpower Tour was attended by over a thousand visitors and almost twenty-eight thousand enjoyed the state park's costumed interpreters ("Living History" program) during the National Park Service's Mill and Canal Tour. An evening "Summer Seminar Series" sponsored by the interpretive staff was held in the Visitors' Center and drew almost two hundred people. The program was originally designed as an educational activity for National Park Service and State interpreters but was opened up this year to the general public. The visitors' center was also used this year for many other scheduled activities including six fly-tying clinics sponsored by the Lowell Flyfishers Association.

Anticipating heavier use of the Merrimack River Upper Basin with the opening of the new boathouse and restored bathhouse next year, park staff turned to the Greater Lowell community for assistance in managing the recreational opportunities on the River and organized a Merrimack River Basin Activities Committee which is compromised of several organizations which use the Basin. The committee will develop regulations for the use of the Basin so that all interests can continue to enjoy it as it becomes a more popular resource.

The performing arts stage at the Vandenberg Esplanade (the Sampas Pavilion) was the site of serveral scheduled events. Two performances by the University of Lowell Band and Choir attracted three thousand people at each performance. The Fifth Annual Mayor's Cup Race also drew many people to the riverfront park. The Division also supported the performing arts in downtown Lowell by purchasing the sound and lighting system for the "Market Mills Stage" which attracted several thousand people at its weekly performances last summer.

The Fall River Heritage State Park, which was under construction this year, was again used as the site for a free sailing instruction program for children ages ten to sixteen. Eighty-seven youngsters completed the American Red Cross course of instruction which was taught by Division of Forests and Parks personnel. A successful trial with pedal boats at the Fall River park, has led to the formal adoption of this recreation activity into the regular park program. The Lynn Heritage State Park will also be a site for this activity.

In conjunction with the Office of Planning and Development, the Bureau embarked on the formation of "Friends" organizations for each Heritage Park. These community - based groups will assist park staff with raising funds for park programs, historic artifact acquisition, promotion, ect. They will also serve as the Department's vital link to the people and resources of each host City.

Although not a formal role of the new Bureau of Urban Servies at this time, technical assistance in the area of parks and recreation management was provided to several communities. Among the assistance provided: an "Outdoor Recreation Evaluation" of Westover Air Force Base in Chicopee; a critique of a park designed for the Town of Bourne; assistance to the City of Gardner regarding the merger of its separate parks and recreation agencies into one organizational unit to promote more efficiency and quality in the services these two closely related agencies render.

APPENDIX

SUMMARY OF LAND ACQUISITION AND CONSTRUCTION

SUMMARY OF RECREATION REVENUE

SUMMARY OF RECREATION ATTENDANCE

SUMMARY OF RECREATION BUDGET

SUMMARY OF ATTENDANCE AT FORMAL INTERPRETIVE PROGRAMS

GYPSY MOTH - 1983

RULES AND REGULATIONS -
  SUPPRESSION AND CONTROL OF PUBLIC NUISANCES

PRELIMINARY REVIEW - CONTROLLING THE GYPSY MOTH
  A REPORT BY THE SENATE COMMITTEE ON POST AUDIT AND OVERSIGHT

SUMMARY

OFFICE OF PLANNING AND DEVELOPMENT - FISCAL YEAR - 1983

CONSTRUCTION AND 03 CONSULTANT CONTRACTS

TITLE OF EACH CATEGORY	NUMBER OF CONTRACTS OF EACH CATEGORY	TOTAL DOLLAR VALUE OF EACH CATEGORY
Appraiser	63	$ 204,988.
Title Examiner and Legal Assistant	26	157,022.
Design, Studies and Exhibit Designers	11	987,321.
Surveys (Land & Archaeological)	4	195,020.
Construction	19	7,734,318.
Resident Engineers & Planners	18	588,073.
TOTALS	141	COST = $9,866,742.

LAND ACQUISITION

NUMBER OF PARCELS	AMOUNT OF ACREAGE	TOTAL COST OF PARCELS
60 Parcels	1,604 acres	$9,996,955

GRAND TOTAL = $119,863,697

FISCAL YEAR 1983

REGION	FOREST/PARK RESERVATION	CONTRACT NUMBER	GENERAL CONTRACTOR	CONTRACT AMOUNT	CONTRACT DATE	SCOPE OF WORK
I	Fall River Heritage S. P.	48-81A	John H. Fellouris, Inc.	$2,758,300	9/16/82	Construction of a visitor center building, boathouse building, pedestrian footbridge, boardwalk, site development, utilities and landscaping.
I	Horseneck Beach S. R.	77-82	K. R. Rezendes, Inc.	5,200	11/16/82	Demolition of a Concrete Tower.
I	Scusset Beach S. R.	74-82	East Coast Marine, Corp.	23,793	2/5/83	Removal of damaged piles, and furnishing and driving treated piles at the Pier.
II	Great Brook Farm S. P.	73-82	Brook-Ocean Builders, Inc.	20,608	1/7/83	Main Barn roofing and carpentry.
II	Halibut Point S. P.	90-82	Reid Marine Services, Inc.	6,459	11/24/82	Removal of rubble and organic debris from all levels of the interior of the tower.
II	Halibut Point S. P.	72-82	A & W Artesian Well Co.	6,055	8/24/82	Well drilling.
II	Lowell Heritage S. P.	65-82	Walter Reed Corp.	1,086,358	8/4/82	General site and landscape improvements including site preparation, installation of pavement, irrigation systems, a parking lot, lighting and plant materials.

REGION	FOREST/PARK RESERVATION	CONTRACT NUMBER	GENERAL CONTRACTOR	CONTRACT AMOUNT	CONTRACT DATE	SCOPE OF WORK FISCAL YEAR
II	Lowell Heritage S. P.	68-82	Angelo C. Didio	998,000.	5/25/83	Construction of a Boathouse facility and Rehabilitation of a Public Bathhouse.
III	Gardner Heritage S. P.	66-82	D. M. Crossman & Son, Inc.	20,636.	9/14/82	Lake Street Firestation Interior Demolition.
III	Moore S. P.	69-82	Raymond Concrete Constr. Inc.	5,540.	8/3/82	Culvert repair.
IV	Holyoke Heritage S. P.	75-82	Holyoke Water Works	5,742.	7/29/82	Water Main Construction.
IV	Holyoke Heritage S. P.	83-82	Holyoke Gas & Electric	11,673.	9/22/82	Gas Main Construction.
IV	Holyoke Heritage S. P.	64-82	Acquadro & Cerruti, Inc.	2,435,241.	9/21/82	Construction of a Visitor Center & Landscape Improvements.
IV	Windsor S. F.	71-82	ECM Electric, Inc.	6,900.	9/28/82	Well-pump Installation.

FISCAL YEAR

REGION	FOREST/PARK RESERVATION	CONTRACT NUMBER	GENERAL CONTRACTOR	CONTRACT AMOUNT	CONTRACT DATE	SCOPE OF WORK
V	Beartown S. F.	99-83	Virgilio Const. Co.	6,720.	4/11/83	Paving at the Headquarters building.
V	Mt. Greylock S. R.	46-81	F. J. Dahill Co.	8,488.	7/12/82	Masonary treatment at Veteran Memorial Tower.
V	Tolland S. F.	101-83	Lane Const. Co.	122,650.	5/12/83	Peninsular Park Paving.
V	Tolland S. F.	93-82	McPak Co. Inc.	197,130.	5/18/83	Rehabilitation of Otis Reservoir Outlet Structure
V	Berkshire County	76-82	Markings Inc.	8,825.	9/30/82	Road Striping at Mt. Greylock, Beartown and Tolland
				7,734,318		

ACQUISITION & CONSTRUCTION

FISCAL YEAR 1983

Land Acquisition - 7/1/82 to 6/30/83

LOCATION	AREA	GRANTOR	DATE RECORDED	ACREAGE	COST ($)
Dalton	Appalachian Trail	Berkshire Natural Resources Council, Inc.	7/14/82	44.3A	$ 65,000.
Dalton	Appalachian Trail	Berkshire Natural Resources Council, Inc.	7/14/82	.59A	Easement
Gardner	Gardner Heritage S.P.	City of Gardner	7/22/82	7,728 S.F.	--
Gardner	Gardner Heritage S.P.	City of Gardner	7/22/82	5,046 S.F.	Easement
Lowell	Lowell Heritage S.P.	Proprietor's of Locks & Canals	8/2/82	1,315 S.F.	1,000.
Plymouth	Myles Standish S.F.	A.D. Makepeace Company	8/11/82	212.A	Gift
Plymouth	Myles Standish S.F.	Commonwealth of Massachusetts	8/11/82	151.A	--
Lawrence	Lawrence Heritage S.P.	Angelo & Agatha Fisichella	8/13/82	11,340 S.F.	75,000.
Uxbridge & Northbridge	Blackstone River S.P.	Stanton W. Putnum	8/20/82	65.07A	19,580.
Northbridge	Blackstone River S.P.	Conrad E. Hall	8/20/82	22.4A	7,900.
Northbridge	Blackstone River S.P.	Gordon & Elva R. Youngsma	8/30/82	65.33A	118,000.
Harwich	Hawksnest Pond	Nathaniel Wright	9/20/82	--	9,000. Court Judgment

ACQUISITION & CONSTRUCTION

FISCAL YEAR 1983

Land Acquisition - 7/1/82 to 6/30/83

LOCATION	AREA	GRANTOR	DATE RECORDED	ACREAGE	COST ($)
Lowell	Dutton St. Lot Lowell Heritage S.P.	Commonwealth of Massachusetts	9/30/82	1.349A	--
Lowell	Dutton St. Lot Lowell Heritage S.P.	Commonwealth of Massachusetts	9/30/82	.973A	--
Plymouth	Myles Standish S.F.	Florence Guild Nixon	10/14/82	46.9A	75,000.
Northbridge	Blackstone River S.P.	Mary Senkarik	10/26/82	11.56A	3,500.
Uxbridge & Northbridge	Blackstone River S.P.	Owner Unknown	10/26/82	14.98A	4,500.
Granby	Holyoke Range	William W. Gallup	11/18/82	22.4A	9,600.
Fall River	Fall River Heritage S.P.	Meyer & Charlotte Litchman	10/20/82	3,225 S.F.	Lease
Northbridge	Blackstone River S. P.	White Consolidated Industries, Inc.	12/10/82	27.42A	10,300.
Mashpee	South Cape Beach	Corina Tobey or Heirs	12/16/82	2.0A	2,000.
Mashpee	South Cape Beach	Chester A. Wright, Jr.	12/16/82	1.9A	2,000.
Mashpee	South Cape Beach	Ada Jonas	12/16/82	2.5A	84,000.
Mashpee	South Cape Beach	Rosanna Jonas or Heirs	12/16/82	3.6A	21,600.

ACQUISITION & CONSTRUCTION

FISCAL YEAR 1983

Land Acquisition - 7/1/82 to 6/30/83

LOCATION	AREA	GRANTOR	DATE RECORDED	ACREAGE	COST ($)
Mashpee	South Cape Beach	Winthrop E. Hall	12/16/82	6.6A	$ 212,500.
Mashpee	South Cape Beach	New Seabury Corp.	12/16/82	297.67A	5,870,900.
Mashpee	South Cape Beach	Fields Point Corp.	12/16/82	87.3A	85,200.
Mashpee	South Cape Beach	Owners Unknown	12/16/82	0.3A	300.
Washington	October Mtn. S.F.	American Tel & Tel Co.	12/30/82	1.3A	Release of Easement
Northbridge	Blackstone River S.P.	Albert T. Koopman	12/31/82	6.8A	49,700.
Lowell	Lowell Heritage S.P.	Lowell Electronic Park Realty Trust	1/14/83	42,150 S.F.	182,100.
Millville	Blackstone River S.P.	Theodore Chase	1/7/83	3.1A	Gift
Sandwich	Shawme-Crowell S.F.	Commonwealth of Massachusetts	1/11/83	10.A	Lease Amended
Uxbridge	Blackstone River S.P.	Rice City Auto Parts Inc.	2/2/83	15.6A	160,000.
Northbridge	Blackstone River S.P.	William Chase & Charles Roche Jr.	2/9/83	1.07A	6,500.
Egremont	Appalachian Trail	Minot & Istar Dole	1/14/83	24.6A	Gift
Washington & Hinsdale	Appalachian Trail	City of Pittsfield	1/14/83	83.3A	Easement

ACQUISITION & CONSTRUCTION

FISCAL YEAR 1983

Land Acquisition - 7/1/82 to 6/30/83

LOCATION	AREA	GRANTOR	DATE RECORDED	ACREAGE	COST ($)
Monterey & Great Barrington	Appalachian Trail	Ann M. Straus	3/17/83	38.53A	$ 42,350
Royalston	Royalston S.F.	Ronald M. Druker & Laurence O. Albre	3/15/83	50.75A	26,500.
Uxbridge	Blackstone River S.P.	Covich & Healy Et Als	3/21/83	3.39A	Gift
Princeton	Mount Wachusett S.R.	David & Barbara Krashes	4/28/83	25.75A	65,000.
Edgartown	South Beach	Tuscarora Land Co.	5/4/83	13.A	192,000.
Edgartown	South Beach	Eleanor Bonnar Atwood	5/4/83	9.7A	182,000.
Lowell	Lowell Heritage S.P.	Exxon Education Foundation	4/27/83	55,918 S.F.	145,000.
Brewster	Cape Cod Rail Trail Nickerson S.P.	Elizabeth B. Larkin	5/9/83	10,001 S.F.	Exchange
Brewster	Cape Cod Rail Trail Nickerson S.P.	Commonwealth of Massachusetts	5/9/83	60 Ft. Easement	Exchange
Brewster	Cape Cod Rail Trail Nickerson S.P.	Sumner E. Robinson	5/9/83	2.35A	27,500.
Uxbridge	Blackstone River S.P.	John & Agnes Steele	6/1/83	41.86A	21,750.
Northbridge	Blackstone River S.P.	U.L.D. or Beltramini	6/1/83	7.8A	2,350.

ACQUISITION & CONSTRUCTION

FISCAL YEAR 1983

Land Acquisition - 7/1/82 to 6/30/83

Page 5 of 5

LOCATION	AREA	GRANTOR	DATE RECORDED	ACREAGE	COST ($)
Uxbridge & Northbridge	Blackstone River S.P.	Gniaded, Aldrich, Dalbec, Dalbec & Beaudoin	6/1/83	47.22A	$ 11,805.
Uxbridge & Northbridge	Blackstone River S.P.	George Legg Et Als	6/1/83	13.8A	5,000.
New Marlborough	Cookson S.F.	First Agricultural Bank	5/27/83	7.A	Gift
Hawley	Hawley S.F.	New England Power Co.	6/2/83	0.5A	Exchange
Wendell	Wendell S.F.	New England Power Co.	6/2/83	82.A	Exchange
Plainfield	Hawley S.F.	New England Power Co.	6/2/83	28,500 S.F.	Exchange
Wales	Brimfield S.F.	New England Power Co.	6/2/83	33.A	Exchange
Wendell	Wendell S.F.	Commonwealth of Massachusetts	6/2/83	54.A	Easement
Dalton	Appalachian Trail	First Agricultural Bank Trustee	6/8/83	24.61A	68,000.
Edgartown	South Beach	James E. Bannister	6/9/83	1.5A	32,600.
Falmouth	Washburn Island	Albert Lincoln Washburn	6/14/83	335.A	2,100,000.

1983 SUMMARY OF REVENUE

AREA	DAY-USE	CAMPING	OTHER	TOTALS
OCEAN BEACHES	598,288.50	468,543.00	43,079.31	1,109,910.81
SKATING RINKS	177,165.50		2,198,574.66	2,375,740.16
SWIMMING POOLS	94,891.09		3,822.96	98,714.05
FORESTS AND PARKS	1,031,189.85	1,037,175.50	168,163.99	2,236,529.34
TOTALS	1,901,581.94	1,505,718.50	2,413,593.92	5,820,894.36

BEACHES FY 1983 INCOME

	PARKING	CAMPING RECEIPTS	WALK-INS	SEASON PASS	BATHHOUSE	CONCESSION	LOCKERS	PAY PHONE	MISC.	BUS	TOTALS
FT. PHOENIX	11,022.00			9,220.00		102.28		7.89			20,352.17
HORSENECK	309,096.00	54,178.00	76.50	54,880.00		29,975.00	26.60	88.27	100.00	700.00	449,120.37
SALISBURY	114,140.00	290,169.00		22,200.00		8,299.00		1,446.35	346.00	200.00	436,800.35
SCUSSET	70,834.00	124,196.00		5,780.00		2,196.50		491.42		140.00	203,637.92
TOTALS	505,092.00	468,543.00	76.50	92,080.00		40,572.78	26.60	2,033.93	446.00	1040.00	1,109,910.81

RINKS FY 1983

	CHILDREN	GROUP	ADULTS	SPECIAL EVENTS	RENTALS	SPECTATOR WALK-INS	LOCKERS	CONCESSION	PAY PHONE	MISC.	JOGGING	TOTALS
AUBURN	4,323.50		6,930.00	1,418.00	96,497.50		842.25	7,917.67	25.35		8.00	117,962.27
BROCKTON	6,633.00		6,133.00	3,018.00	155,646.75		359.35	1,240.00	53.78			173,083.88
FALL RIVER	5,322.00		4,876.00	3,935.05	128,032.50		610.80		46.49	55.00		142,877.84
FRANKLIN	7,519.00		8,459.00	8,338.25	150,351.25		526.25	5,200.00	98.58	6.50	45.50	180,544.33
GARDNER	3,037.00		3,930.00	3,641.75	92,937.50	25.00	178.80	1,150.00	26.62			104,926.67
GREENFIELD	2,700.50		2,485.00	943.12	6,9745.00		89.00		23.61			75,986.23
HAVERHILL	5,514.00		2,274.00	1,184.50	120,395.00		265.20	2,410.00	17.09			132,059.79
HOLYOKE	3,108.50		3,779.00	2,656.50	112,640.00		218.20		21.32			122,423.52
LOWELL	5,361.00		8,550.00	3,684.75	135,720.00		733.80	1,500.00	35.95			155,585.50
MARLBORO	3,896.50		6,283.00	2,834.00	110,770.00		350.90	4,700.00	16.05			128,850.45
NEW BEDFORD	3,082.00		5,036.00	6,777.50	125,887.50		437.80	6,502.00	92.41			147,815.21
NEWBURYPORT	5,624.00		5,563.00	11,740.50	131,935.00		296.40		45.28		76.00	155,280.18
NORTH ADAMS	2,311.50		2,931.00	2,334.00	42,517.50		118.00	175.00	17.39	1.90		50,406.29
PEABODY	4,759.00		5,818.00	6,670.00	135,228.00		262.00	4,800.00	20.79			157,557.79
PLYMOUTH	5,668.00		5,725.00	3,878.25	122,852.50		527.00		46.65			138,697.40
SPRINGFIELD	2,446.00		5,092.00	845.00	111,190.00		200.50	7,100.00	19.83			126,893.33
TAUNTON	2,718.00		4,544.00	5,311.25	139,482.50		293.10	1,501.99	24.33			153,875.17
WORCESTER	6,838.50		7,741.00	1,767.50	90,687.00		350.70	3,500.00	29.61			110,914.31
	80,862.00		96,149.00	70,977.92	2,072,515.50	25.00	6,660.05	47,696.66	661.13	63.40	129.50	2,375,740.16

POOLS FY 1983

	CHILDREN	ADULTS	PASSES	LOCKERS	PAY PHONE	CONCESSION	MISC.	TOTALS
AGAWAM	2,992.25	2,624.00				215.75		5,832.00
ATTLEBORO	3,717.00	2,390.00				400.00		6,507.00
BROCKTON	6,960.75	3,877.50				306.00		11,144.25
CHICOPEE	2,675.50	1,194.50			1.80	5.35		3,877.15
CLINTON	3,340.00	1,054.00				76.00		4,470.00
FALL RIVER	6,574.25	1,133.00		14.50		250.00		7,971.75
FITCHBURG	2,302.50	834.50						3,137.00
HOLYOKE	1,725.50	919.00				100.00		2,744.50
LAWRENCE	5,077.25	2,146.00				452.52	502.50	8,178.27
LEOMINSTER	2,453.75	692.50				76.50		3,227.75
LOWELL	3,791.50	759.00				402.04		4,952.54
LUDLOW	1,924.00	616.50				153.25		2,693.75
MILFORD	3,872.50	1,731.00			6.45			5,609.95
SOUTHBRIDGE	2,603.34	537.50				5.35		3,146.19
SOUTH HADLEY	1,744.25	1,325.00				5.35		3,074.60
SPRINGFIELD	2,359.50	283.50				5.35		2,648.35
WESTFIELD	2,932.50	1,232.00				178.35		4,342.85
WORCESTER #1	4,886.50	2,163.50				260.00		7,310.00
WORCESTER #2	4,407.75	3,037.50		5.90		400.00		7,851.15
TOTALS	66,340.59	28,550.50		20.40	8.25	3,291.81	502.50	98,714.05

PARKS FY 1983

	PARKING TICKETS	CAMPING RECEIPTS	SEASON PASS	BUS TICKETS	ADULT WALK-INS	HOUSE RENT	CHILDREN ROLL TYPE	COTTAGE PERMITS	CONCESSION	MISC.	PAY PHONE	PIER PERMITS	GROUP	TOTALS
AMES NOWELL	2,508.00		80.00	20.00					6.00					2,614.00
ASHLAND	5,550.00		3,020.00	20.00				136.00						8,726.00
ASHMERE LAKE								1,500.00		4,320.00				1,500.00
BEARTOWN	6,303.00	5,797.00	1,520.00	160.00	28.50	786.50			5.35					14,600.35
BORDERLAND						2,184.00								2,184.00
BOSTON HARBOR ISLANDS										5,042.50				5,042.50
BRADLEY PALMER	8,675.00		1,720.00	40.00	4.50	3,753.50							1,220.50	15,413.50
BUFFUMVILLE	4,305.00		1,300.00						5.00					5,610.00
CARLISLE						4,396.00			800.00					5,196.00
CHESTER GARDNER	3,153.00	405.00	180.00		262.00									4,000.00
CHICOPEE	37,050.00		10,400.00	120.00	362.75		37.35	255.65						48,225.75
CLARKSBURG	3,459.00	3,740.00	2,280.00	100.00	61.80		19.80		10.70	300.00				9,971.30
COCHITUATE	89,844.00		17,060.00	1,040.00	1,820.00			6,876.00				2,295.00		118,935.00
D.A.R.	12,285.00	20,685.00	4,310.00						332.70					37,612.70
DEAN POND (BRIMFIELD)	7,419.00	312.00	2,860.00	160.00	70.25				5.35					10,826.60
DEMEREST LLOYD	30,300.00		5,440.00	200.00					102.28					36,042.28
DIGHTON ROCK	1,860.00		840.00	20.00					6.00					2,726.00
DOUGLAS	33,750.00		7,860.00	260.00					57.00					41,927.00
ERVING	17,100.00	8,315.00	9,260.00	40.00	287.50									35,002.50
FEDERATED WOMEN'S	321.00													321.00
FREETOWN	2,703.00		300.00	20.00		960.00								3,983.00
GRANVILLE	2,577.00	6,045.00	80.00											8,702.00
HAMPTON POND	25,680.00		8,100.00	20.00	2,048.75	522.00	85.65		301.00					36,757.40
HAROLD PARKER	14,307.00	56,870.00	680.00	60.00					48.50		143.36			72,108.86
HOLLAND POND	7,302.00		2,500.00						5.35					9,807.35
HOPKINTON	115,800.00		30,180.00	900.00					5,172.00		42.35	88.00	405.00	152,587.35
LAKE DENNISON	11,172.00	52,282.00	4,524.00	20.00					182.49					68,180.49
LEOMINSTER	17,709.00		8,020.00		871.25									26,600.25
MARTHA'S VINEYARD						648.00								648.00
MASSASOIT	7,392.00	58,633.00	2,300.00						155.28		61.99			68,542.27
MOHAWK TRAIL	5,814.00	22,775.50	480.00											29,069.50
MT. GRACE	1,236.00		100.00											1,336.00
MT. GREYLOCK	657.00	8,068.00						11,158.27	5.35	21,245.98				41,134.60
MT. WASHINGTON		571.00												571.00
MYLES STANDISH	41,931.00	157,636.00	1,580.00	540.00		1,614.00		36,040.00	976.00	300.00	338.94			240,955.94
NICKERSON	5,400.00	299,080.00	40.00						6,866.67		2,002.86			313,389.53
OCTOBER MOUNTAIN	636.00	19,356.00									84.70			20,076.70
OTTER RIVER	3,324.00	16,924.00	1,480.00	20.00					20.99		2.66			21,771.65
PITTSFIELD	7,089.00	8,983.00	520.00	40.00					200.00	5.35	.70			16,838.05

	PARKING TICKETS	CAMPING RECEIPTS	SEASON PASS	BUS TICKETS	ADULT WALK-INS	BOAT RENT	CHILDREN ROLL TYPE	COTTAGE PERMITS	CONCESSION	MISC.	PAY PHONE	PIER PERMITS	GROUP	TOTALS
QUINSIGAMOND LAKE	2,768.00				2,337.50				1,395.00	1,082.50			550.00	10,270.75
QUINSIGAMOND REGATTA	3,651.00		1,580.00		1,237.50					2,137.75 (TENNIS TICKETS)				6,468.50
ROBINSON	10,200.00		2,540.00						136.35					14,101.35
RUTLAND	19,050.00		6,080.00	20.00					195.00					25,345.00
SANDISFIELD	5,862.00	23.00	3,780.00		10.00		1.25		5.35					9,681.60
SAVOY MOUNTAIN	2,739.00	18,996.00	420.00						25.70					22,180.70
SHAWME CROWELL	6,342.00	96,556.00				658.00			288.99		238.87			104,083.86
SKINNER						792.00			60.00					852.00
SOUTHCAPE BEACH								15,000.00						15,000.00
SPENCER	6,123.00		1,160.00		15.75						8.60			7,307.35
TOLLAND	11,044.00	30,600.00	1,640.00		3.25									52,087.25
TULLY REC. AREA		2,597.00												2,597.00
UPTON						570.00								570.00
WACHUSETTS MOUNTAIN						3,109.00								3,109.00
WALDEN POND	130,918.00		23,180.00	80.00	241.70	8,188.00			2,751.79		53.81			166,413.30
WARREN MANNING	1,023.00		200.00											1,223.00
WATSON POND	14,799.00		2,700.00	80.00	98.75		57.60		203.76					18,019.11
WELLS	897.00	31,854.00							41.15					32,792.15
WELLS STRUETER	9,162.00		6,640.00		48.75				116.35					15,967.10
WENDELL	3,072.00		2,720.00		23.75				5.35				90.00	5,911.10
WILLARD BROOK	18,038.00	11,362.00	4,640.00	220.00	12.50	378.50			90.00					34,741.00
W.D. MEAD. HILL.	10,050.00	9,439.00	4,240.00	80.00										23,809.00
WINDSOR	4,271.00	3,989.00	1,230.00	120.00	2.50		.45		10.70					9,623.65
WOMPATUCK	189.00	77,282.00				3,103.00			21.00					80,595.00
TOTALS	804,569.00	1,037,175.50	191,844.00	4,400.00	9,849.25	24,734.50	202.10	70,065.92	20,618.50	34,434.00	2,978.84	2,303.00	2365.50	2201,140.19

	TRAILER	LAUNDRO-MAT	SEASON PASS			
OFFICE ACCOUNT			200.00	1,250.00	15,020.00	16,470.00
WALDEN BREEZES	1,7920.00	999.15				18,919.15
TOTALS	1,7920.00	999.15	200.00	1,250.00	15,020.00	35,389.15

2,236,529.14

1983 FISCAL YEAR
ATTENDANCE RECORD

AREA	CAMPING	DAY-USE	NON-PAID	PAID	TOTAL
AMES NOWELL	-	13,093	10,962	2,131	13,093
ASHLAND	-	13,099	10,588	2,511	13,099
BEARTOWN	6,249	27,622	20,891	6,731	33,871
BLACKSTONE	-	-	-	-	-
BORDERLAND	-	47,935	47,935	-	47,935
BOSTON HARBOR ISLANDS	2,158	29,944	29,944	-	32,102
BRADLEY PALMER	-	60,276	51,602	8,674	60,276
BUFFUMVILLE	-	19,372	10,569	8,803	19,372
CALLAHAN, RAYMOND J.	-	25,930	25,930	-	25,930
CAMPBELL FALLS	-	-	7,387	-	7,387
CAPE COD RAIL TRAIL	-	144,306	144,306	-	144,306
CATAMOUNT	-	-	-	-	-
CHESTER - BLANFORD	250	2,889	2,590	299	3,139
CHICOPEE	-	97,428	30,126	67,302	97,428
CLARKSBURG	2,954	7,087	2,680	4,407	10,041
COCHITUATE	-	183,019	49,287	133,732	183,019
CONNECTICUT RIVER RAMP	-	-	-	-	-
CONWAY	-	-	-	-	-
COOKSON	-	2,806	2,806	-	2,806
D.A.R.	13,141	33,506	14,267	19,239	46,647
DEAN POND, BRIMFIELD	270	22,150	7,122	15,028	22,420
DEMAREST LLOYD	-	57,244	16,171	41,073	57,244
DENNISON LAKE	38,165	77,436	56,144	21,292	115,601
DIGHTON ROCK	-	12,371	9,291	3,080	12,371
DOUGLAS	-	85,835	35,375	50,460	85,835
DUBUQUE	-	21,105	21,105	-	21,105

AREA	CAMPING	DAY-USE	NON-PAID	PAID	TOTAL
EAST MOUNTAIN	-	-	-	-	-
ERVING	10,561	59,986	39,993	19,993	70,547
FALL RIVER HERITAGE	-	-	-	-	-
FED. WOMENS CLUB	325	15,896	15,365	531	16,221
F. G. HILLS	-	4,775	4,775	-	4,775
FREETOWN	-	26,428	22,698	3,730	26,428
GARDNER	-	9,243	4,689	4,554	9,243
GEORGETOWN-ROWLEY	-	-	-	-	-
GRANVILLE	9,278	13,849	7,932	5,917	23,127
GREAT BROOK FARM-CARLISLE	-	44,255	44,255	-	44,255
HALIPUT POINT	-	15,003	15,003	-	15,003
HAMPTON PONDS	-	67,906	25,102	42,804	67,906
HAROLD PARKER	28,569	36,307	25,425	10,882	64,876
HAWK'S NEST	-	-	-	-	-
H.O. COOK	-	-	-	-	-
HOLLAND POND	-	27,748	21,024	6,724	27,748
HOLYOKE RANGE		14,755	14,755	-	14,755
HOPKINTON	-	153,610	97,804	55,806	153,610
LEOMINSTER		56,140	24,118	32,022	56,140
LOWELL-DRACUT	-	19,705	19,705	-	19,705
LOWELL HERITAGE	-	171,587	171,587	-	171,587
LUDLOW	-	-	-	-	-
MARTHA'S VINEYARD	-	68,740	68,740	-	68,740
MASSASOIT	38,577	20,535	10,210	10,325	59,112
MOHAWK TRAIL	10,949	50,454	44,570	5,884	61,403

AREA	CAMPING	DAY-USE	NON-PAID	PAID	TOTAL
MONROE	-	-	-	-	-
MOORE	-	14,796	14,796	-	14,796
MT. EVERETT	-	48,304	48,304	-	48,304
MT. GRACE	-	18,476	16,499	1,977	18,476
MT. GREYLOCK	14,781	304,198	303,100	1,098	318,979
MT. SUGARLOAF	-	59,551	59,551	-	59,551
MT. WASHINGTON	1,741	91,838	91,838	-	93,579
MYLES STANDISH	80,848	81,932	38,546	43,386	162,780
NANTUCKET	-	-	-	-	-
NICKERSON	144,904	60,661	60,661	-	205,565
NORTHFIELD	-	-	-	-	-
OCTOBER MT.	8,037	28,407	28,407	-	36,444
OTIS	-	-	-	-	-
OTTER RIVER	14,854	31,246	24,628	6,618	46,100
PEARL HILL	4,731	17,974	5,356	12,618	22,7051
PERU	-	-	-	-	-
PETERSHAM	-	-	-	-	-
PITTSFIELD	4,744	71,793	66,340	5,453	76,537
PLUM ISLAND	-	89,773	89,773	-	89,773
PURGATORY CHASM	-	61,688	61,688	-	61,688
QUINSIGAMOND-REGATTA	-	157,583	147,779	9,804	157,583
QUINSIGAMOND-LAKE PARK	-	59,201	42,460	16,741	59,201
RED BRIDGE	-	-	-	-	-
RICH, J. HARRY	-	-	-	-	-
ROBINSON	-	23,798	9,055	14,743	23,798

AREA	CAMPING	DAY-USE	NON-PAID	PAID	TOTAL
RUTLAND	-	50,132	44,087	6,045	50,132
SANDISFIELD	-	19,723	10,520	9,203	19,723
SAVOY	9,825	21,459	19,355	2,104	31,284
SHAWME-CROWELL	48,634	22,192	21,896	296	70,826
SKINNER	-	133,945	133,945	-	133,945
SOUTH RIVER	-	-	-	-	-
SPENCER	-	19,015	8,788	10,227	19,015
STANDISH MONUMENT	-	19,831	19,831	-	19,831
STREETER	-	47,309	28,185	19,124	47,309
TACONIC FALLS	-	-	-	-	-
TOLLAND	26,432	72,521	53,799	18,722	98,953
TULLY RECREATION AREA	7,329	20,968	20,968	-	28,297
UPTON	-	17,296	17,296	-	17,296
WACHUSETT MOUNTAIN	-	238,431	238,431	-	238,431
* - SKI AREA			18,000	102,000	120,000
WAHCONAH FALLS	-	34,873	34,873	-	34,873
WALDEN POND	-	696,648	143,508	553,140	696,648
WARREN MANNING	-	2,712	1,472	1,240	2,712
WARWICK	-	-	-	-	-
WATSON	-	32,028	9,003	23,025	32,028
WEBB	-	47,859	47,859	-	47,859
WELLS	16,791	11,599	10,758	841	28,390
WENDELL	-	19,265	12,565	6,700	19,265
WEST LAKE	16	3,615	3,571	44	3,631
WHITEHALL	-	9,242	9,242	-	9,242

*PRIVATELY OPERATED

AREA	CAMPING	DAY-USE	NON-PAID	PAID	TOTAL
WILLARD BROOK	5,779	64,990	11,125	53,865	70,769
WILLOWDALE	-	39,627	39,627	-	39,627
WINDSOR	3,532	17,784	9,276	8,508	21,316
WOMPATUCK	47,648	484,621	484,621	-	532,269
TOTAL	602,072	5,357,666	3,846,210	1,511,456	5,959,738

SKATING RINKS	DAY-USE	TOTAL
AUBURN	124,385	124,385
BROCKTON	194,636	194,636
FALL RIVER	131,152	131,152
FRANKLIN	155,054	155,054
GARDNER VETERANS	94,111	94,111
GREENFIELD	84,282	84,282
HAVERHILL	73,516	73,516
HOLYOKE	136,558	136,558
LOWELL	128,359	128,359
MARLBORO	278,064	278,064
NEW BEDFORD	117,488	117,488
NEWBURYPORT	143,286	143,286
NORTH ADAMS	50,409	50,409
PEABODY	141,989	145,989
PLYMOUTH	118,346	118,346
SPRINGFIELD	109,931	109,931
TAUNTON	107,490	107,490
WORCESTER	120,186	120,186
TOTAL	2,313,242	2,313,242

SWIMMING POOLS	DAY-USE	TOTALS
AGAWAM	22,919	22,919
ATTLEBORO	21,029	21,029
BROCKTON	46,012	46,012
CHICOPEE	20,423	20,423
CLINTON	25,121	25,121
FALL RIVER	29,675	29,675
FITCHBURG	16,115	16,115
HOLYOKE	9,783	9,783
LAWRENCE	26,542	26,542
LEOMINSTER	19,663	19,663
LOWELL	15,245	15,245
LUDLOW	11,378	11,378
MILFORD	21,423	21,423
SOUTHBRIDGE	15,342	15,342
SOUTH HADLEY	16,300	16,300
SPRINGFIELD	17,447	17,447
WESTFIELD	14,142	14,142
WORCESTER #1 (SHINE)	36,934	36,934
WORCESTER #2	35,314	35,314
TOTAL	420,807	420,807

BEACH AREAS	CAMPING	DAY-USE	NON-PAID	PAID	TOTAL
FT. PHOENIX	-	58,403	46,752	11,651	58,403
HORSENECK	25,052	379,327	83,780	295,547	404,379
SALISBURY	178,701	1,900,025	1,799,000	101,025	2,078,726
SCUSSET	50,567	158,025	55,254	102,771	208,592
*SOUTH CAPE	-	18,280	18,280	-	18,280
TOTAL	254,320	2,514,060	1,996,162	517,898	2,768,380

* Newly acquired for 6 months only.

	CAMPING	DAY-USE	TOTAL
TOTAL ATTENDANCE AT ALL FACILITIES	856,392	10,605,775	11,462,167

DIVISION OF FORESTS AND PARKS

RECREATION BUDGET

	FY 1983 APPROPRIATION (inc. Bal. Fwd)	FY 1983 PROPOSED TRANSFERS	FY 1983 TOTAL AVAILABLE
2120-0300			
SUBSIDIARY			
01	2,333,328	-102,000	2,231,328
02	7,659,561	+100,000	7,759,561
03	71,490	0	71,490
05	28,520	0	28,520
06	48,581	0	48,581
07	64,297	0	64,297
08	1,820,160	0	1,820,160
09	29,988	-7,298	27,414
10	296,936	-20,000	276,936
11	20,116	+7,298	27,414
12	642,083	0	642,083
13	2,276	+2,000	4,276
14	11,059	0	11,059
15	53,683	0	53,683
16	37,922	+20,000	57,922
TOTAL	13,120,000	0	13,120,000
2120-1600			
13	58,850	58,850	58,850

ATTENDANCE AT FORMAL INTERPRETIVE PROGRAMS

FY 1983

PARK	# Programs	#Participants	Avg.
REGION I			
Massasoit	73	956	13
Shawme Crowell/ Scusset Beach	50	571	11
Myles Standish	66	793	12
Dighton Rock	informal contact with museum visitors	1630	
Wompatuck	79	580	7
Nickerson	88	1765	20
Great Brewster Island	information not available		
Grape Island	84	666	8
Georges Island (MDC)	82	904	11
Bumpkin Island	26	162	6
Lovells Island (MDC)	68	435	6
Gallops Island	57	528	10
Peddocks Island (MDC)	information not available		
REGION II			
Walden Pond	300	1044	4
Salisbury Beach	9	349	38
Plum Island	21	962	46
REGION III			
Otter River	87	2333	27
Douglas	66	419	6
REGION IV			
Skinner/Holyoke Range	256	6042	24
D.A..R.	102	1380	13
REGION V			
Mt. Greylock	97	876	9
Pittsfield	69	601	9
TOTAL	1,674	23,016	14

The Commonwealth of Massachusetts
Department of Environmental Management
Division of Forests and Parks
Leverett Saltonstall Building, Government Center
100 Cambridge Street, Boston 02202

NOTICE

TO: Mayors and Boards of Selectmen,
All Massachusetts Communities

SUBJECT: Gypsy Moth Policy - 1983

DATE: February 23, 1983

Attached for your information and assistance are the 1983 Gypsy Moth policy recommendations.

We wish to emphasize that this policy strongly recommends that Bacillus thuringiensis (B.t.) be used as the control material in publicly funded and conducted programs.

It is the opinion of this agency that the use of this material most responsibly addresses both the needs for nuisance control and protection of the public.

As details regarding financial assistance programs are finalized, notice of application procedures will be publicly announced.

Gilbert A. Bliss
Director of Forests and Parks

James Gutenson
Commissioner
Dept. Environmental Management

JG:GAB:mk

The Commonwealth of Massachusetts
Department of Environmental Management
Division of Forests and Parks
Leverett Saltonstall Building, Government Center
100 Cambridge Street, Boston 02202

GYPSY MOTH POLICY - 1983

RECOMMENDATIONS TO MASSACHUSETTS COMMUNITIES

The following recommendations are provided by the Department of Environmental Management as information and assistance to the communities of the Commonwealth in decision making relative to the current gypsy moth outbreak. No attempt is made to influence the decision as to whether local conditions warrant a control program. The purpose here is to present what is felt to be, all things considered, the best approach if control measures are to be considered.

Adjusted rates of application of B.t. in 1982 show promise that difficulties encountered in previus years are being overcome. It is the opinion of this Department that B.t. is an efficaceous material in the control of the gypsy moth when properly applied.

GYPSY MOTH POPULATION - STATUS

Information gathered during 1982 indicates that the current outbreak, although expected to continue in 1983, will be of a much lesser extent and intensity than has been experienced during the last two years. For the most part egg mass survey work resulting from requests from various communities has been completed and it is now possible to predict with reasonable accuracy where problems will exist in 1983. Map A, included, indicates in general, results of this egg mass survey.

With the above information in hand it then becomes a local decision as to whether a control program is warranted or not. Local decision making will also determine the control material and method of application to be used. Department personnel are available to assist in the planning and to give technical advice when needed.

Map B, included in this publication, indicates the results of the 1982 aerial survey which is conducted annually to determine the extent of current defoliation by the gypsy moth in Massachusetts. This map does not necessarily indicate problem areas to be expected in 1983.

BACKGROUND

Policy recommendations issued annually by the Department are based on the Final Environmental Impact Report completed in 1981. All facets of the gypsy moth problem have been studied and reviewed, including control alternatives. The Report will be updated periodically. When new information becomes available, particularly that pertaining to control procedures, it will become part of the Report and be included in future Policy Recommendations.

RECOMMENDATION

A) Until such time as new information is available, this Department will continue to advocate that a strong emphasis be placed on the biological pest management approach to gypsy moth control. Communities are strongly advised, when deliberating the gypsy moth problem, to use a product containing Bacillus thuringiensis as the control agent. The use of chemical pesticides should only be carefully considered if a community is faced with extremely high gypsy moth populations. Chemical control agents must always be reviewed on the basis of causing some environmental damage. In no case does the Department advise BROAD SCALE use of chemical pesticides. The reasons are two-fold: (1) experience indicates that on an overall statewide basis the percentage of mortality inflicted on the forests by the gypsy moth is small; (2) a reliance is placed on the established natural controls over a majority of infested areas.

B) Should, however, a community select a chemical control agent to alleviate the gypsy moth problem it is recommended that one of the products as noted on the following charts be selected. Timing of application must be correct according to larval developments. Label directions must be carefully followed. Those products are included on the following two charts as a further aid in local decision making.

COMMUNITY FINANCIAL ASSISTANCE

A limited amount of funds will be available in 1983 to reimburse, possibly up to 50%, communities adhering to the Department recommendation to use B.t. as the control agent. Both ground and aerial control programs will be considered.

WAYS TO MINIMIZE IMPACT

1. Make sure the application is on target. Ways to assure a minimum amount reaching non-target areas incude:

   - application in low wind conditions and not immediately prior to rain;
   - use of well-calibrated equipment which results in an even, carefully directed, release;
   - a clear understanding on the part of the applicator of the locations and borders of target areas;
   - the allowance of sufficient buffer zones to incorporate drift.

2. Keep the pest control agent away from water. This is particularly important in the application of carbaryl (which can harm aquatic invertebrates) and diflubenzuron and trichlorfon (which can harm both fish and aquatic invertebrates). This means an avoidance (with sufficient buffer zones) of major surface waters, as well as known conduits to groundwater. Areas which are dotted with small unavoidable surface streams or ponds should be excluded as target areas.

3. Minimize direct contact with humans. Townspeople should be notified sufficiently in advance of application to assure that clothing, toys, etc., are not left outside. Application should be made at dawn or some other time when human outdoor activity is at a minimum. Campers, youth groups, and other in-state controlled areas should be asked to vacate the area temporarily. To minimize exposure to the application, protective equipment such as gloves, disposable clothing and/or masks should be used as recommended by the label. Contaminated clothing should be washed separately.

4. Minimize other potential effects. Beekeepers should be given warning prior to the application of carbaryl or acephate. Open areas and edge habitats which might be inhabited by small mammals, birds, and other wildlife should be avoided in the applications of carbaryl, acephate, diflubenzuron and trichlorfon. Also, prior to the application of any of these chemicals, a list of susceptible plants should be published to enable householders and farmers to take protective action.

Regulations of this Department and of the Massachusetts Pesticide Board should be referred to for more detailed information.

SUMMARY

Although all of the products mentioned are registered for use against the gypsy moth, the Department is continuing to place the Commonwealth on a course of recommendations that support the use of biological controls. Continued research and the development of improved application techniques are increasing the efficacy of B.t. resulting in less dependency upon chemicals.

Gilbert A. Bliss
Director of Forests and Parks

APPROVED:

James Gutensohn
Commissioner
Dept. Environmental Management

JG/GAB/lew

Toxicological Information

Material	Acute Toxicity		Chronic Toxicity			Fish	Invertabrates	Birds	Mammals	Beneficial Insects	Plants
	Oral	Deremal	Carcino-genecity	Terato-genecity	Muta-genecity						
NPV	0	0	0	0	0	*	*	0	0	0	0
B.t.	0	0	0	0	0	0	*	0	0	0	0
Carbaryl	0	0	0	?	X	?	X	?	0	Bees, Parasites	Boston Ivy
Orthene	0	0	0	0	?	0	*	X	*	X Bees & Others	X Apple, El & Maple
Dimilin	0	0	?	0	*	X	X	?	*	*	0
Dylox	0	0	*	*	*	X	X	0	0	X	X Apple, Carnation & Zinnia

* There is no evidence of mutagenic effects of Dimilin. There is some evidence of mutagenic activity of two metabolites.

* Insufficient information available.

KEY

X = Probable areas of concern

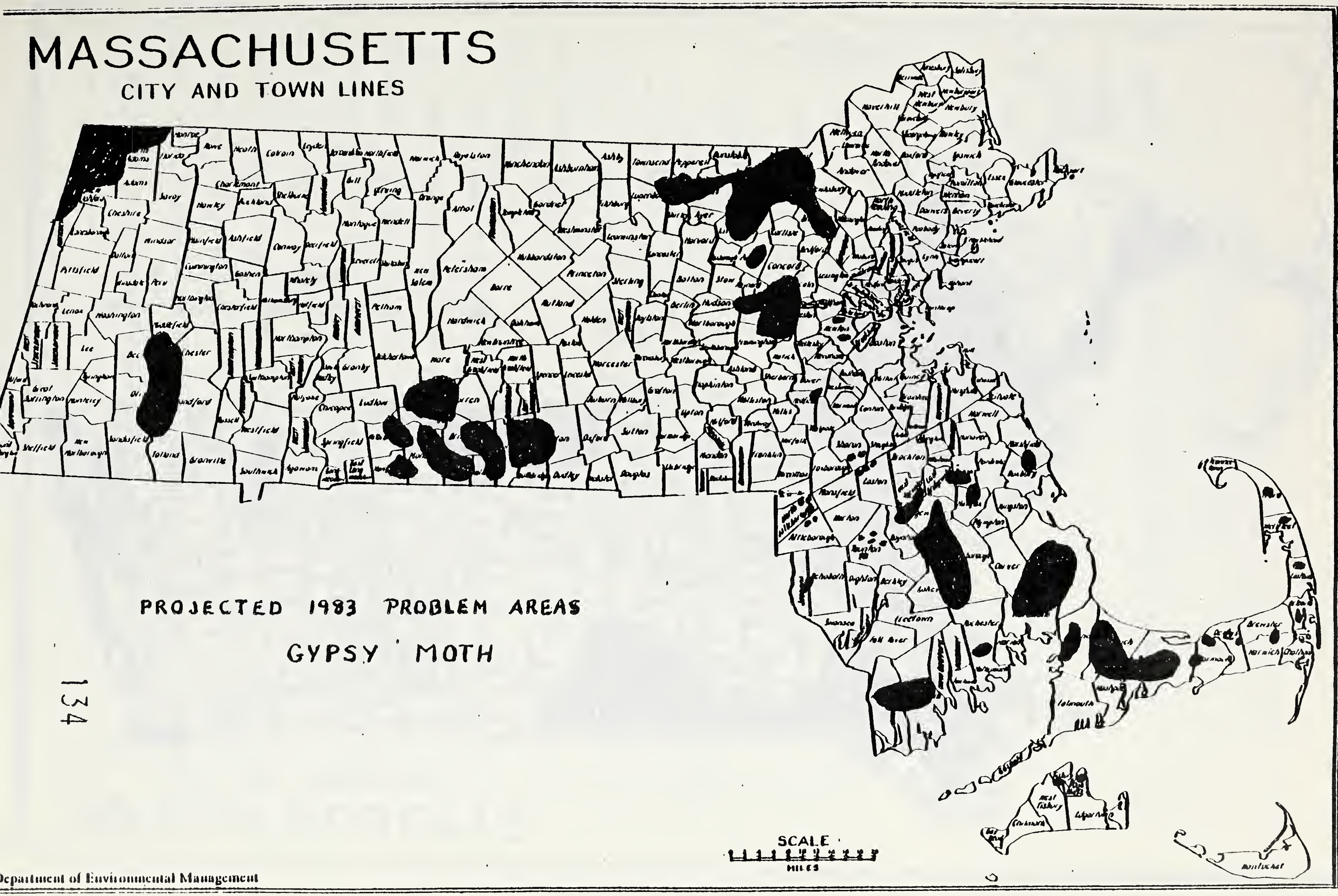
? = May be an area of concern

0 = Not an area of concern

Summary of Materials and Methods Considered for Gypsy Moth Control

Material or Method	Rate Per Acre	Efficacy	Consistency of Results	Cost Per Acre (Aerial)	Ease of Application	Availability	Generally Viable Alternative - 1980	Comments
Inundative release of parasites		0-25%	?	High	Difficult	Need facilities to rear	No	
Establish new species of parasites		Varies	Continuous if established	Moderate	Simple	Only to governmental agencies	No	On going programs in Massachusetts
Gypcheck	* 2 applications	Erratic	Erratic	High	Simple	Only to governmental agencies	No	
Bacillus thuringiensis	1 pound twice	51-75%	Erratic	(1978) $13.50	Simple	Yes	Yes	
Disparlure	?	?	?	?	Simple	No	No	Effective only in low populations
Sterile Male Release		?	?	High	Difficult	Need Facilities	No	On going research
Sevin	1 pound	76-100%	Good	$3.50 (1978)	Simple	Yes	Yes	Refer to chart on Toxicology
Dylox	1 pound	76-100%	Good	$5.50	Simple	Yes	Yes	Refer to chart on Toxicology
Orthene	0.5 pound	76-100%	Good	$7.00	Simple	Yes	Yes	Refer to chart on Toxicology
Dimilin	.03 to .05 pound	76-100%	Good	$5.00-$7.00	Simple	Yes	Yes	Only on Forested Area

* 25.0 to 125 million potency units/A



MASSACHUSETTS

CITY AND TOWN LINES

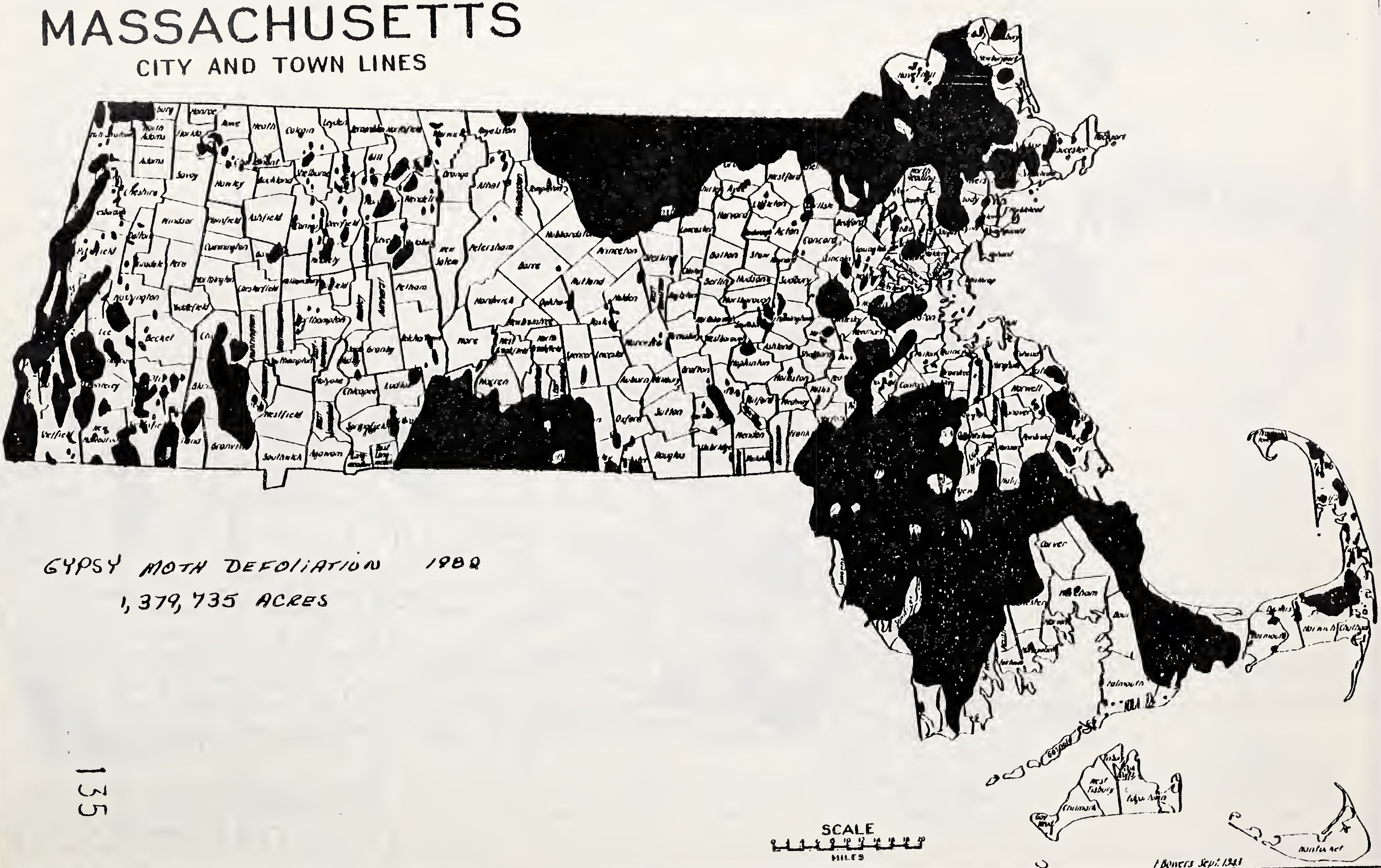
PROJECTED 1983 PROBLEM AREAS

GYPSY MOTH

Department of Environmental Management

MASSACHUSETTS

CITY AND TOWN LINES



GYPSY MOTH DEFOLIATION 1982
1,379,735 ACRES

RULES AND REGULATIONS

304 CMR 50.00 SUPPRESSION AND CONTROL OF PUBLIC NUISANCES

Section

50.01 Purpose

50.02 Scope

50.03 Definitions

(50.04 to 50.06) Reserved

50.07 Notification Required for Control Programs

50.08 Exclusion of Properties

50.09 Review of Programs by the Bureau of Insect Pest Control

50.01 Purpose

The purpose of 304 CMR 50.00 is to establish certain procedures to be followed by public agencies and individuals or groups of individuals in carrying out programs for the control and suppression of public nuisances.

50.02 Scope

The scope of 304 CMR 50.00 pertains to notification prior to the commencement of municipal aerial or wide area ground control programs, procedures for the exclusion of private properties from municipal control areas, and provisions for the periodic review of municipal control programs by the Division of Forests and Parks, Bureau of Insect Pest Control. 304 CMR 50.00 incorporates certain provisions of regulations promulgated by the Department of Food and Agriculture, Pesticide Board, under 333 CMR 10:00 Certification and Licensing of Pesticide Applicators which are to be used as an additional reference.

50.03 Definitions

For the purposes of this chapter, the definitions set forth in 50.00 in this section apply, unless the context or subject matter requires a different interpretation.

(a) "Chief Superintendent", shall mean the Chief Superintendent of the Bureau of Insect Pest Control within the Division of Forests and Parks, Department of Environmental Management.

(b) "Commissioner", shall mean the Commissioner of Environmental Management as established by M.G.L. Chapter 21, Section 3.

(c) "Control Program", shall mean any use of a control material to suppress or control a public nuisance by either ground based equipment or aircraft.

(d) "Direct Application", shall mean the purposeful application of a pesticide to the target tree or trees.

(e) "District Supervisor", shall mean a district supervisor of the Bureau of Insect Pest Control.

(f) "Local Superintendent", shall mean the local superintendent of insect pest control as established by Chapter 132, Section 13.

(g) "Public Nuisance", shall mean certain insect pest as declared under the provisions of M.G.L. Chapter 132, Section 11.

(h) "Wide Area Application", shall mean a ground application of certain impact as determined by the District Supervisor under 304 CMR 50.09 (2).

50.07 Notification Required for Control Programs

(1) No aerial application of a control material shall be made unless the following conditions are met:

(a) Notification of the proposed application has been given by the person or entity initiating said application to the public residing on adjacent lands by publication of a notice in a newspaper of general circulation normally used by the municipality for legal notices not later than two (2) days before the application and no sooner than ten (10) days before the application. The notice shall include the purpose of the control program, the mode of application, the general location of the control area, the control material to be used, the anticipated commencement date and time of the control program, the location where maps delineating the control area may be viewed, the locations where marking materials for aerial control programs will be distributed and the name and telephone number of an individual from whom further information can be obtained. Not later than ten (10) days prior to the anticipated date of the control program, such notice shall be forwarded to the Local Superintendent of Insect Pest Control who will post said notification in the city or town hall of the municipality in which he serves and in other public places such as libraries as he or she may deem appropriate. The Local Superintendent shall also forward said notice with a request that it be posted to the office of the Board of Health, the office of the Conservation Commission and chief administrative officer of the municipality.

(b) Notice of the proposed aerial application has been giving to Department of Food and Agriculture, Pesticide Board, by the person or entity contracting for said aerial spraying in accordance with 333 CMR 10.00.

(2) No wide area ground application of a control material shall be made unless notification is made as provided in 304 CMR 50.07 (1) (a). Whether a ground application is considered to be a wide area application shall be determined in advance by the District Supervisor in consultation with the Local Superintendent as provided under 304 CMR 50.09 (2).

(3) Any public agency or persons initiating a control program using a substance labeled as toxic to bees shall make every reasonable effort to contact local beekeepers to advise them of the control program and the use of substances known toxic to bees. The Local Superintendent shall maintain a list of known beekeepers.

50.08 Exclusion of Properties from Control Areas

(1) Except as provided in 304 CMR 50.08 (3), no direct application of a control material shall be made to a private property which has been designated for exclusion from such application by a person residing or legally having control of said property. Said exclusion shall pertain to any control program from which exclusion is requested for the calendar year in which notice is given.

(a) In the case of a control program initiated by a public agency, exclusion shall be designated by providing written notice to the public agency not later than 72 hours prior to the anticipated commencement of the control program or by hand not later than 48 hours prior to the anticipated commencement of the control program. Such notice shall include the name, address, and sufficient information to identify the property of the person making the request.

(b) In the case of a control program intiated by an individual or a group of individuals, exclusion shall be designated by providing written signed notice to the individual or any member of a group of individuals intiating the control program. Such notice shall include the name, address and sufficient information to identify the property of the person making the request.

(2) All areas designated for exclusions from direct application of pesticides shall be marked as follows:

(a) In the case of aerial applications by helium filled balloons or other means approved by the District Supervisor which are visibly conspicuous to the applicator. The cost of helium filled ballons or other marking materials when approved shall be paid for by the entity causing the application to be made.

The landowner or person residing on the property requesting the exclusion shall be responsible for marking the areas to be excluded and making such markings known to the entity causing the application to be made. The entity causing the application to be made shall appropriately mark the excluded areas on maps required under 333 CMR 10.03 and on any map used by the pilot of the aircraft who shall be made aware of the markings delineating the areas to be excluded.

(b) In the case of ground applications the boundaries of areas to be excluded shall be marked at least every fifty feet by paper plates, orange surveyor's tape, or other appropriate means established by the Local Superintendent as the uniform means of marking areas to be excluded in the municipality. The landowner or persons residing on the property requesting the exclusion shall be responsible for the purchase of the materials and the marking of areas to be excluded. Markings need not be made on boundaries in areas inaccessible to ground application equipment. The markings shall be made known to the entity causing the application to be made who shall be responsible for communicating the details of the markings to the person carrying out the application.

(3) Requests for exclusion shall not be honored in those cases in which:

(a) The Commissioner of Public Health has certified that the application is to be made to protect the public health.

(b) The Commissioner of Environmental Management has certified that the application is necessary to contain an infestation of a recently introduced pest.

(c) The Commissioner of Food and Agriculture has certified that the application is necessary to contain an infestation of a pest which is a threat to the agriculture of the Commonwealth.

50.09 Review of Control Programs by the Bureau of Insect Pest Control

(1) Not later than March 1st of each year, the Local Superintendent shall forward to the District Supervisor estimates of all planned municipally funded aerial and ground control programs to be conducted within the municipality for the control and suppression of public nuisances. Such estimates shall be provided by the Local Superintendent on a standard form provided by the Bureau of Insect Pest Control and will include the insect pest, the control material to used, the mode of application, the estimated area to which the control material is to be applied, and the period during which the anticipated control program will take place. The information provided shall be periodically updated by the Local Superintendent by written notice or verbal communication with the District Supervisor.

(2) The District supervisor in consultation with the Local Superintendent shall review all ground control programs to determine if a program constitutes wide area application and requires public notice under 304 CMR 50.07 (1) (a).

In making his or her determination, the District Supervisor shall consider:

(a) the proposed control material
(b) the purpose of the control program
(c) the extent of the control program
(d) the public nuisance to be controlled
(e) the number of persons impacted and other factors which in his professional opinion are relevant.

(3) In the event of a determination that a ground control program constitutes wide area application, the District Supervisor shall inform the Local Superintendent who shall notify the municipal agency, individual or group of individuals initiating the control program that public notification under 304 CMR 50.07 (1) (a) is required. When the program is initiated by an entity other than a municipal agency, individual, or group of individuals, the District Supervisor shall be responsible for such notification to the entity initiating the control program which may include county, state, or federal agencies.

(4) In the case of an aerial control program or a ground control program which has been determined by the District Supervisor to constitute a wide area application, the District Supervisor shall conduct a biological assessment to evaluate the need for the control program and forward the findings to the Chief Superintendent.

(5) A statewide record of control programs based on the information provided in 304 CMR 50.09 (2) shall be maintained by the Chief Superintendent.

REGULATORY AUTHORITY

304 CMR 50.00; M.G.L. Chapter 132, Section 11.

The Commonwealth of Massachusetts

SENATE COMMITTEE ON POST AUDIT AND OVERSIGHT

Room 216. State House Boston, MA 02133

Telephone 722-1252

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Chairman

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Bureau Director

PRELIMINARY REVIEW

Controlling the Gypsy Moth

Division of Forests and Parks
Department of Environmental Management

March 24, 1982

A Report by the
SENATE COMMITTEE ON POST AUDIT AND OVERSIGHT

Senator Louis P. Bertonazzi, Chairman

Prepared by the
SENATE POST AUDIT AND OVERSIGHT BUREAU

SPAO-004-82

TABLE OF CONTENTS

Summary 1

I. Performance Audit

- A. Background 2
- B. 1981 Experience/1982 Projections 3
- C. Control Measures: Cost/effectiveness . 4

II. Findings: Preliminary Review 8

Recommendations 11

References and Interviews 12

Appendices 13

SUMMARY

The gypsy moth population rises and falls with a cycle of about seven years. Though in the words of experts the gypsy moth does not present a major environmental hazard, the scope of last year's outbreak has resulted in statewide concern.

This report addresses the major issues regarding state and local intervention in controlling the gypsy moth: the chemical/biological issues, budgetary concerns, and projections for this spring's outbreak. The report reviews the FY1982 budget supplement request of the Division of Forests and Parks (Department of Environmental Management), and is presented for consideration in the development of the FY1983 budget.

In 1981, nearly three million acres were defoliated by gypsy moths in Massachusetts. While this exceeded any previous year's defoliation, the Division of Forests and Parks does not anticipate an outbreak as large this year, though abnormal wind and temperature conditions in May could negate this decrease.

Gypsy moth control programs were sponsored by 116 Massachusetts communities in 1981. Seventy communities received aid from the Bureau of Insect Pest Control in surveying the potential problem and assisting in measures to control the gypsy moth. Nearly $ 460,000 was spent by these communities on control programs from the ground, and $ 1,168,000 was spent on aerial spraying.

A November 1981 survey of 155 cities and towns showed that $ 3,351,872 was either appropriated or requested for appropriation for 1982 suppression activities. Funds for ground spraying totaled $ 1,108,469, and the balance for aerial spraying.

The current FY1982 budget includes $ 100,000 to financially assist communities in their gypsy moth control activities. The Division has requested a supplement of $ 300,000 for this purpose to be used for biological control materials. The Division will establish priority for the assistance based on the 1981 Egg Mass survey. It is our recommendation that the supplement be granted to the Division of Forests and Parks subject to the limitations which they have outlined in their request.

I. PERFORMANCE AUDIT

A. Background

B. 1981 Experience/1982 Projections

C. Control Measures: Cost and Effectiveness

A. Background

The gypsy moth was introduced into the Boston area from Europe in 1869 for experiments on a hardy breed of silkworm.[1] Some of the experimental insects escaped from the laboratory. About twenty years later the destructive capabilities of these insects gained public notice. In spite of the fact that the larvae are spread by the prevailing southwesterly wind in the spring, the gypsy moth migrated as far west as the Berkshires by the 1930's.

Today, the gypsy moth has spread thorughout New England within the range of its favored food, the oak tree.[2] Though many trees are susceptible to defoliation by insects, the oak (with the exception of the red oak) aspen and birch trees make up the major sources of food except during major infestation. (Appendix I)

The moth lays its eggs in protected spots in the early fall in masses of about 500 eggs. The eggs are unaffected by weather unless the temperature drops below -25F. The egg hatch is signaled by rising temperature and occurs around May 1 in Massachusetts, about the time the leaves have unfurled. The larvae climb to the top of trees and spin threads from which they hang until a breeze carriers them off, the trait that gives them their name. Once they settle on foliage, they begin to feed. The larvae go through five or six molts depending on their sex before they mature and spin cocoons for the pupal stage, usually in early July. About two weeks later, the adult moths emerge. Shortly after emergence, the females begin to emit a sex pherome which attracts males from considerable distances. After mating, the female lays her eggs and completes the life cycle.

Natural factors which control the gypsy moth are somewhat limited since its parasites and predators were not imported with it from Europe. If, after the hatch, the caterpillars are subjected to a period of cold weather, a significant kill results. Unfortunately, this weather pattern also damages the trees

Some birds and mammals feed on the larvae and pupal, but they are a control factor only in times of sparse population. As Appendix II shows, the population swings of the gypsy moth are quite broad as evidenced by the swings in defoliation. The cycle varies, but can be expected to range from four to twelve years between population peaks.

Several parasites have been introduced to try to control the gypsy moth population. Different parasites can attack all of the developmental stages of the moth. In addition, the Bureau of Insect Pest Control is evaluating several newly introduced parasites as control measures.

B. 1981 Experience/1982 Projections

In spite of a century of work since the spread of the gypsy

Even though the gypsy moth population may be in decline, most towns are planning an increase in the level of control and eradication measures in 1982. (Appendix V). Cities and towns in Massachusetts spent $1,623,100 on suppression activities, $455,090 on ground spraying and the remainder on aerial spraying

A survey taken in late fall of 1981 by the Division of Forests and Parks showed that the number of cities and towns contemplati action had increased significantly; the budgets for ground and aerial control measures throughout the state had doubled to $3,351,872. (Appendix VI)

C. Control Measures: Cost and Effectiveness

Since 1979, the Division of Forests and Parks has clearly outlined its policy on gypsy moth control using pesticides (3,5,7). Mechanical control (physical removal of the egg masses) clearly presents problems in terms of efficiency of manpower, cost, detection, and accessibility of the egg mass.

After World War II, DDT was used extensively for control of gypsy moths. DDT was applied in an oil base by aerial spraying. It proved effective for control but did not eradicate the gypsy moth. Unfortunately, its long lifetime in the environment created environmental problems and its use was halted in 1964.

More recently carbaryl (Sevin^{R}) has been used extensively for the protection of shade tree and forest tree insect control. The consensus of Federal, state and local officials is that this is the most effective agent against gypsy moths available at this time. It does have some serious drawbacks, however.

moth, the effort has yet to make any progress against the insect. January, 1981, was the coldest on record in Massachusetts. Yet it preceded the largest outbreak of gypsy moth in the state's history.[3] Gypsy moth defoliation totaled 2,826,095 acres exceeding the previous record year 1953 in which 917,996 acres were defoliated. Nearly the entire state was affected in 1981 (Appendix III).

Noteworthy also in 1981 was the unusually early hatch of the caterpillars. Since it coincided with the bud break, the caterpillars may have ranged farther than normal in their search for food.[4] However, this population surge may also have had a benefit since many caterpillars died of starvation or dessication before they could reproduce. In addition, the parasites of the gypsy moth had a larger population on which to feed.

The degree and certainty of the natural decline of the gypsy moth population is not guaranteed however.[5] The lag time for the increase in the population of the parasites may be so long as four years.

The Division of Forests and Parks undertook an Egg Mass Survey in October 1981 which showed an alteration of the distribution from the defoliation in 1982 (Appendix IV). In particular, it should be noted that there is a large build up of egg mass along the New York border indicating that the areas of infestation may be different this year,[6] and may be particularly severe along the northern part of the state. the western border, and areas of the southeast.

It has been showed to be moderately toxic to laboratory animals although no evidence has been shown of toxicity to humans. Some teratogenic effects have been observed as well. Carbaryl has little toxicity to birds directly, but does have some effect on the available food for birds. Aquatic life is unaffected. Some effects have also been shown in certain apples, pears, water meleons, Boston Ivy and other grasses. There are also reports that it is acutely toxic to deer.

Carbaryl has a short half-life in soil, about 8 days. Its half life in water is somewhat longer. Perhaps the most serious drawback to its use is its toxicity to bees, earthworms and predator beetles of the gypsy moth. It has also been shown toxic to an egg parasite of the gypsy moth.

Acephate (Orthene^{R}) has been shown to be non-toxic to mammals. Some birds are affected although no toxicity has been shown to aquatic life. It also is highly toxic to bees and other beneficial insects as well as some plants.

Acephate also has a short half life in soil, ranging from one-half to eight days depending on soil conditions.

Both of these chemicals have obvious drawbacks which have been acknowledged by the Division of Forests and Parks. Their advantage is strictly economic. The total cost of application for these insecticides is between $6.00 and $8.00 per acre.

Since 1980, the Division of Forests and Parks has been explicit in its endorsement of biological rather than chemcial control o gypsy moths. Specifically, they have endorsed the use of Bacillus thuringiensis (B.t.). There has been no adverse impact demonstrated on humans, lab mammals, birds, fish (with the exception of juvenile coho salmon given large doses), other insects or plants. This bacteria is specific for the gypsy moth.

The drawbacks in its use have been twofold. First, it is expensive and must be applied twice. Cost estimates for the two applications are about $25.00 per acre. Secondly, unlike the chemical insecticides, it is not an instantaneous killer. The bacteria must invade the gut of the caterpillar before the toxin is released. This process takes a few days.

The experience with B.t. is limited. Several studies performed by the Bureau of Insect Pest Control have produced varying degrees of success. They have concluded that the agent is much more sensitive to the means of application. In addition, in view of its high cost relative to Sevin, it might be more effective if applied from the ground. Lastly, its effectiveness would be increased if a suitable sticking agent were found so that it would be retained in the trees for a longer time. Recently, there has been optimistic but inconclusive testing done in this area, though commercial developments are proceeding.

Another promising technique is the release of a virus, nuclear polyhedrosis virus (NPV), also known as Gypcheck, which is toxic to the gypsy moth and has not been found toxic to any other form of life.

This is in the very early stages of development and is only available to government agencies at this time. It is a natural parasite of the gypsy moth, but is only a control factor in times of large population.

Finally, preliminary studies have shown mixed results using the sec pherome emitted by the female to trap the males before mating. The sex pherome, known as disparlure, has been tested in Massachusetts.

This techinque is generally effective in times of sparse populat of the gypsy moth. Since population levels have been high the results of field studies have been mixed. Since there is no mechanism for the pherome to enter the food chain, the toxicity this compound has not been studied. The experience of the trials in Masaachusetts showed some effects on gypsy moth reproduction, but the experimenters were hesitant to draw any conclusions. It is important to note that this agent only affects the next generation of the gypsy moth and has no effect on defoliation in the current year. (A summary of these findings is listed in Appendices VII and VIII.)

II. Findings: Preliminary Review

1. Supplementary funds for spraying of pesticides should be administered by the Division of Forests and Parks. They have been appropriated $100,000 for this task Item (2120-1400) and have asked for an additional $300,000. (Appendix IX) This

additional money would be "expended under written agreements with communities and will be limited to use of biological control materials."[8] In addition, this money would be used to fund ground spraying only. The 1981 Egg Mass Survey will establish the priority for disbursements.

2. The current "invasion" is transient and the gypsy moth population will decline. It is important to underscore the Division of Forests and Parks committment to biological controls that do not affect the natural predators of the gypsy moth or other beneficial insects such as bees and earthworms.. This approach should be viewed as nuisance relief since the moths pose little environmental threat unless they are active several years in a row.

3. It is likely that last year was the peak in the current cycle of the gypsy moth. Therefore, the cities and towns may see a smaller gypsy moth population this year, although the infestation may appear in different areas than last year.

4. Federal money has been requested to assist in funding aerial spray work, but this will cover only 266,000 acres and will only underwrite 12.5% of the cost which has been estimated at $14.30 per acre.

5. The cities and towns were constrained last year by limitations of Proposition 2½ and by procedural constraints on the use of free money for spraying without voter approval at a town meeting. Since the degree of infestation took many by surprise last year despite adequate warning by the Division of Forests and Parks, it was impossible to appropriate money for spraying

during the period when spraying would be most effective. The increase in contemplated spraying action for 1982 reflects this point.

6. Opponents of chemical spraying have endorsed the use of biological controls in comments on the Final Environmental Impact Report, in the public press,[9] and in magazine articles.[4]

Recommendations

1. Among the state agencies under review by this bureau, the Division of Forests and Parks has no superior in terms of staff professionalism, technical expertise and knowledge in its field. Those charged with the administration of the program have shown a commitment to the balance between public health, environmental safety and eradication of the gypsy moth. We recommend that the supplement be approved subject to the limitations outlined by the Division.

2. This supplement should be recognized as a means of enabling the Division to promote the use of biological controls, both existent and manmade, on a temporary, though cyclical, increase in the gypsy moth population.

3. The Division of Forests and Parks has requested $70,224 in order to complete its on-going study of effective control measures. We recommend that this funding be granted (item number 2120-1400).

REFERENCES AND INTERVIEW USED IN THIS REPORT

1. Department of Environmental Management, Division of Forests and Parks, Gypsy Moth Control: Final Environmental Impact Report, March, 1981.
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3. Division of Forests and Parks, Annual Report, FY1981.
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6. Dr. Francis Holmes Director, Shade Tree Laboratories, University of Massachusetts Extension Service, Personal Interview.
7. Division of Forests and Parks, Annual Report, FY1979.
8. Department of Environmental Management, Division of Forests and Parks, Additional Budget Request, Item 2120-1400.
9. Milford Daily News, Summer 1981.
10. Mr. Gilbert Bliss, Director, Division of Forests and Parks, Personal Interview.
11. Mr. Charles S. Hood, Chief of the Bureau of Insect Pest Control, Personal Interview.
12. Mr Douglas Trefry, Director of the Stow site, Bureau of Insect Pest Control, Personal Interview.

Appendices

Appendix I.	Classification of Tree susceptible to Gypsy moth defoliation
Appendix II.	Defoliation Records from 1924 to present in Massachusetts.
Appendix III.	1981 Defoliation in Massachusetts.
Appendix IV.	1981 Egg Mass Survey.
Appendix V.	Community Gypsy Moth suppression activity in 1981.
Appendix VI.	Contemplated Gypsy Moth Suppression activity in 1982.
Appendix VII.	Efficiency and availability of Gypsy moth suppression methods and materials.
Appendix VIII.	Toxicology information on chemical and biological controls of gypsy moth.
Appendix XI.	Request for additional funds for Item 2120-1400.

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